

FIG. 1



	W	X	Y	Z	AA	AB
1	<div>C:\lanRawles\Projects\CBM\latestthomas2</div> <div>C:\lanRawles\Projects\CBM\latestthomas2\So</div> <div>C:\lanRawles\Projects\CBM\latestthomas2\projects\052201d</div>					
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FIG. 2A

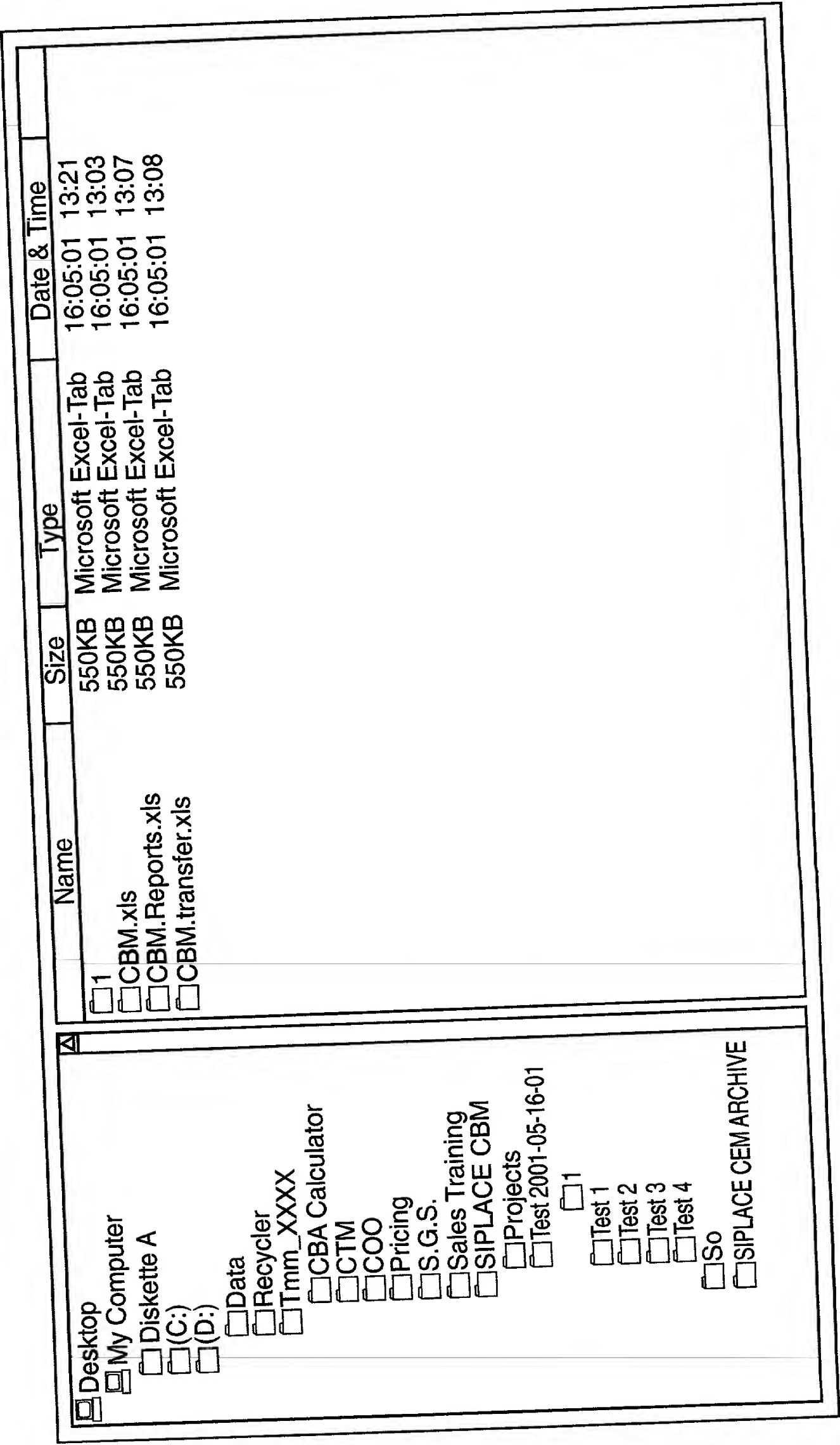


FIG. 3

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U																			
					Main																																			
1																																								
2	Shift Schedule				SHIFT 1									SHIFT 2																										
3					shift start	break 1 start	break 1 end	lunch start	lunch end	break 2 start	break 2 end	shift end	shift start	break 1 start	break 1 end	lunch start	lunch end	break 2 start	break 2 end	shift end	shift start																			
4	Monday				7:00	7:00	7:00	12:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	23:00	23:00																			
5	Tuesday				7:00	7:00	7:00	12:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	23:00	23:00																			
6	Wednesday				7:00	7:00	7:00	12:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	23:00	23:00																			
7	Thursday				7:00	7:00	7:00	12:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	23:00	23:00																			
8	Friday				7:00	7:00	7:00	12:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	23:00	23:00																			
9	Saturday				7:00	7:00	7:00	12:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	23:00	23:00																			
10	Sunday				7:00	7:00	7:00	12:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	23:00	23:00																			
11	shifts apply for model				not working																																			
12	initial Offset																																							
13	Only lunch break applies																																							
14	Breaks apply for machines																																							
15	Weeks per year																																							
16	Days off per year																																							
17	Hours per day																																							
18	Hours per day/average																																							
19	Hours per week																																							
20	Hours per week/average																																							
21	Hours per year				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17																			
22					break 1				break 2				break 1				break 2				shift																			
23	#				start				start				start				start				start																			
24	1				end				end				end				end				end																			
25	2				lunch				lunch				lunch				lunch				lunch																			
26	3				start				start				start				start				start																			
27	4				break 1				break 2				break 1				break 2				break 2																			
28	5				end				end				end				end				end																			
29	6				shift start				shift start				shift start				shift start				shift start																			
30	10				6:00				8:00				8:15				10:00				10:30				14:00				18:00				18:30				22:00			
	11																																							

FIG. 4

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
31				12	7:00			12:00	13:00			15:00	15:00	15:00	20:00	21:00	23:00			23:00	
32				13	7:00	8:00	8:15	12:00	12:30	15:00	15:15	19:30	19:30	20:00	20:15	0:00	0:30	3:00	3:15	7:00	
33				14	7:00			12:00	13:00			15:00	15:00	15:00	20:00	21:00	23:00			23:00	
34				15																	
35				16																	
36				17																	
37				18																	
38				19																	
39				20																	
40				21																	
41				22																	
42				23																	

FIG. 4A

	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
1																				
2																				
3																				
4																				
5																				
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FIG. 4B

	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
31			4:00	5:00			7:00	→ Customer 1												
32								→ Customer 2												
33			4:00	5:00			7:00	→ Customer 3												
34								→ Customer 4												
35																				
36																				
37																				
38																				
39																				
40																				
41																				
42																				

FIG. 4C



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	<div>Line Configuration</div> <div>Insert</div> <div>Delete</div> <div>Database</div> <div>Main</div>																		
1	Return to the Main page																		
2	insert			# of process cells		transport system		assists(min/min)		maintenance (h/min) shift		failure (h/min) level 1		grafic		month		maintenan qu	
3	row					S/D-	synch		MTBA	MTTR	MTBA	MTTR	MTBM	MTTR	MTBF	MTTR	MTBM	MTTR	MTBM
4	delete row					Lane	asynch		MTBA	MTTR	MTBA	MTTR	MTBM	MTTR	MTBF	MTTR	MTBM	MTTR	MTBM
5																			
9	1	7300 Buffer		0	0	0	0	0	60	1	0	0	163.2	0	0	0	100	680	0
10	2	7511 Conveyor 1060		0	0	1	1	1	60	1	0	0	163.2	0	0	0	200	680	0
11																			
12																			
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34																			

FIG. 5

	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG			
1	long term																
2	e (h / min)		year		failure (h / min)		level 3		grafic		Witness Module Single Lane		Witness Module Dual Lane		Initial Position		
3	rier				level 2		level 3		length		offset						
4	MTTM	MTBM	MTTM	MTBF	MTTR	MTBF	MTTR	MTBF	MTTR	length	offset						
5	0	8160	0	0	0	0	0	0	0	100	0	Buffers		0		B1	
9	0	8160	0	0	0	0	0	0	0	0	0	Conv2_1		Conv2_2		conv5_2001	
10	0	8160	0	0	0	0	0	0	0	0	0						
11																	
12																	
13																	
14																	
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FIG. 5A

	AU	AV	AW	AX	AY	AZ
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Bare Board Loader

Buffer

Conveyor 1060

Conveyor 1590

Conveyor 2380

F4 x 2 / SPL

F4 x 3 / SPL

F5

F5 x 2 / SPL

F5 x 3 / SPL

Flip Station 180

HS-50

HS-50 x 2 / SPL

HS-50 x 3 / SPL

Last Lift

Magazine Buffer MB100

Magazine Buffer MB50

Magazine Loader ML02

Magazine Loader ML05

Magazine Unloader MIJ02

Magazine Unloader MIJ05

Printer pro-flow

Printer pro-flow temp control

Printer squeegee operation

Printer squeegee operation temp control

RX 261

RX 262

RX 331

RX 332

RX 411

RX 412

FIG. 5B

	AU	AV	AW	AX	AY	AZ
35	S-20 S-23 S-25 Shuttle-1 lane to 2 lane Shuttle-2 lane to 1 lane Telescopic Gate TG Turn Station TS					
36						
37						
38						
39						
40						
41						

FIG. 5C

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	<div>Line Configuration</div> <div>Insert</div> <div>Delete</div> <div>Database</div> <div>Main</div>																		
1	Return to the Main page																		
2	insert			# of process cells		transport system		assists(min/min)		maintenance (h/min) shift		failure (h/min) level 1		grafic		month		maintenan qu	
3	row					S/D- Lane		MTBA MTTR		MTBA MTTR		MTBF MTTR		X		MTBM MTBM		MTBM	
4	delete row					0 0		60 1		0 0		0 0		100		680 0		4080	
5						1 1		60 1		0 0		0 0		200		680 0		4080	
9	1	7300		0		0		60		0		0		100		680		4080	
10	2	7511		0		1		60		0		0		200		680		4080	
11																			
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34																			

FIG. 6

A		B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
		Line																
1	Database						assists (min / min)		failure (h / min)				shift		weekly		maintenan	
2							MTBF	MTTR	level 1	level 2	level 2	level 2	MTBM	MTTR	MTBM	MTTR	mo	MTBM
3							MTBF	MTTR	MTBF	MTTR	MTBF	MTTR	MTBF	MTTR	MTBF	MTTR		MTBF
4																		
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FIG. 7

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
33	F4 x 2/SPL	1042	1	1	1	60	1						450			163.20		680.00
34	F4 x 3/SPL	1043	1	1	3	60	1						875			163.20		680.00
35	F5	1050	1	1	1	60	1						200			163.20		680.00
36	F5 x 2/SPL	1052	1	1	2	60	1						450			163.20		680.00
37	F5 x 3/SPL	1053	1	1	3	60	1						875			163.20		680.00
38	Flip Station 180	7580	1	1	0	60	1						200			163.20		680.00
39	HS-50	1500	1	1	2	60	1						400			163.20		680.00
40	HS-50 x 2/SPL	1502	1	1	4	60	1						850			163.20		680.00
41	HS-50 x 3/SPL	1503	1	1	6	60	1						1250			163.20		680.00
42	Last Lift	7500	0	0	0	60	1						700			163.20		680.00
43	Magazine Buffer MB100	7320	0	0	0	60	1						100			163.20		680.00
44	Magazine Buffer MB50	7310	0	0	0	60	1						100			163.20		680.00
45	Magazine Loader ML02	7600	1	1	0	60	1						200			163.20		680.00
46	Magazine Loader ML05	7610	1	1	0	60	1						200			163.20		680.00
47	Magazine Unloader MU02	7601	1	1	0	60	1						200			163.20		680.00
48	Magazine Unloader MU05	7611	1	1	0	60	1						200			163.20		680.00
49	Printer pro-flow	9003	1	1	1	60	1						200			163.20		680.00
50	Printer pro-flow temp control	9004	1	1	1	60	1						200			163.20		680.00
51	Printer squeegee operation	9001	1	1	1	60	1						200			163.20		680.00
52	Printer squeegee operation temp control	9002	1	1	1	60	1						200			163.20		680.00
53	RX 261	8001	1	1	1	60	1						700			163.20		680.00
54	RX 262	8002	1	1	1	60	1						700			163.20		680.00
55	RX 331	8003	1	1	1	60	1						700			163.20		680.00
56	RX 332	8004	1	1	1	60	1						700			163.20		680.00
57	RX 411	8005	1	1	1	60	1						700			163.20		680.00
58	RX 412	8006	1	1	1	60	1						700			163.20		680.00
59	S-20	1200	1	1	1	60	1						200			163.20		680.00
60	S-23	1230	1	1	1	60	1						200			163.20		680.00
61	S-25	1250	1	1	1	60	1						200			163.20		680.00
62	Shuttle - 1 lane to 2 lane	7100	0	0	0	60	1						100			163.20		680.00
63	Shuttle - 2 lane to 1 lane	7200	0	0	0	60	1						100			163.20		680.00
64	Telescopic Gate TG	7550	1	1	0	60	1						150			163.20		680.00
65	Turn Station TS	7570	1	1	0	60	1						200			163.20		680.00
66																		680.00
67																		680.00
68																		680.00

FIG. 7A

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
33	F4 x 2 / SPL	1042	1	1	1	60	1									163.20		680.00
34	F4 x 3 / SPL	1043	1	1	3	60										163.20		680.00
35	F5	1050	1	1	1	60										163.20		680.00
36	F5 x 2 / SPL	1052	1	1	2	60										163.20		680.00
37	F5 x 3 / SPL	1053	1	1	3	60										163.20		680.00
38	Flip Station 180	7560	1	1	0	60										163.20		680.00
39	HS-50	1500	1	1	2	60										163.20		680.00
40	HS-50 x 2 / SPL	1502	1	1	4	60										163.20		680.00
41	HS-50 x 3 / SPL	1503	1	1	6	60										163.20		680.00
42	Last Lift	7500	0	0	0	60										163.20		680.00
43	Magazine Buffer MB100	7320	0	0	0	60										163.20		680.00
44	Magazine Buffer MB50	7310	0	0	0	60										163.20		680.00
45	Magazine Loader ML02	7600	1	1	0	60										163.20		680.00
46	Magazine Loader ML05	7610	1	1	0	60										163.20		680.00
47	Magazine Unloader MU02	7601	1	1	0	60										163.20		680.00
48	Magazine Unloader MU05	7611	1	1	0	60										163.20		680.00
49	Printer pro-flow	9003	1	1	1	60										163.20		680.00
50	Printer pro-flow temp control	9004	1	0	1	60										163.20		680.00
51	Printer squeegee operation	9001	1	0	1	60										163.20		680.00
52	Printer squeegee operation temp control	9002	1	0	1	60										163.20		680.00
53	RX 261	8001	1	1	1	60										163.20		680.00
54	RX 262	8002	1	1	1	60										163.20		680.00
55	RX 331	8003	1	1	1	60										163.20		680.00
56	RX 332	8004	1	1	1	60										163.20		680.00
57	RX 411	8005	1	1	1	60										163.20		680.00
58	RX 412	8006	1	1	1	60										163.20		680.00
59	S-20	1200	1	1	1	60										163.20		680.00
60	S-23	1230	1	1	1	60										163.20		680.00
61	S-25	1250	1	1	1	60										163.20		680.00
62	Shuttle - 1 lane to 2 lane	7100	0	0	0	60										163.20		680.00
63	Shuttle - 2 lane to 1 lane	7200	0	0	0	60										163.20		680.00
64	Telescopic Gate TG	7550	1	1	0	60										163.20		680.00
65	Turn Station TS	7570	1	1	0	60										163.20		680.00
66																		680.00
67																		680.00
68																		680.00

FIG. 7B



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
69																163.20		680.00
70																163.20		680.00
71																163.20		680.00
72																163.20		680.00
73																163.20		680.00
74																163.20		680.00
75																163.20		680.00
76																163.20		680.00
77																163.20		680.00
78																163.20		680.00
79																163.20		680.00
80																163.20		680.00
81																163.20		680.00
82																163.20		680.00
83																163.20		680.00
84																163.20		680.00
85																163.20		680.00
86																163.20		680.00
87																163.20		680.00
88																163.20		680.00
89																163.20		680.00
90																163.20		680.00
91																163.20		680.00
92																163.20		680.00
93																163.20		680.00
94																163.20		680.00
95																163.20		680.00
96																163.20		680.00
97																163.20		680.00
98																163.20		680.00
99																163.20		680.00

FIG. 7C

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1																
2	e(h/min)				yearly		grafic		grafic		witness module single lane	witness module dual lane	inbound routing			
3	thly		quarterly		MTBM		MTTM	detailed length offset	high level length offset							
4	MTTM		MTBM	MTTM	MTBM	MTTM										
5		4080.00						0								
6		4080.00						0								
7		4080.00						0								
8		4080.00						0								
9		4080.00						0								
10		4080.00						0								
11		4080.00						0								
12		4080.00						0								
13		4080.00						0								
14		4080.00						0								
15		4080.00						0								
16		4080.00						0								
17		4080.00						0								
18		4080.00						0								
19		4080.00						0								
20		4080.00						0								
21		4080.00						0								
22		4080.00						0								
23		4080.00						0								
24		4080.00						0								
25		4080.00						200		Printermc						
26		4080.00						150		B1						
27		4080.00						150		con5_2001						
28		4080.00						150		con5_2001						
29		4080.00						150		con5_2001						
30		4080.00						150		con5_2001						
31		4080.00						150		con5_2001						
32		4080.00						200		Conveyor001						

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
33		4080.00		8160.00		600	0			S25Cluster2_L1	S25Cluster2	Lift1				450
34		4080.00		8160.00		900	0			S25Cluster3_L1	S25Cluster3	Lift1				875
35		4080.00		8160.00		200	0			S25_L1	S25	Conveyor001				200
36		4080.00		8160.00		600	0			S25Cluster2_L1	S25Cluster2	Lift1				450
37		4080.00		8160.00		900	0			S25Cluster3_L1	S25Cluster3	Lift1				875
38		4080.00		8160.00		200	0			Flip_Station		Printermc				200
39		4080.00		8160.00		350	0			HS50_L1	HS50	Conveyor001				400
40		4080.00		8160.00		900	0			HS50Cluster2_L	HS50Cluster2L	Lift1				850
41		4080.00		8160.00		1350	0			HS50Cluster3_L	HS50Cluster3L	Lift1				1250
42		4080.00		8160.00		100	0			Lastlift		Lift4				700
43		4080.00		8160.00		150	0			Buffer_Magazine100		B1				100
44		4080.00		8160.00		150	0			Buffer_Magazine50		B1				100
45		4080.00		8160.00		200	0			Magazine_Loader2		Printermc				200
46		4080.00		8160.00		200	0			Magazine_Loader5		Printermc				200
47		4080.00		8160.00		200	0			Magazine_Unloader2		Printermc				200
48		4080.00		8160.00		200	0			Magazine_Unloader5		Printermc				200
49		4080.00		8160.00		200	0			Printer		Printermc				200
50		4080.00		8160.00		200	0			Printer		Printermc				200
51		4080.00		8160.00		200	0			Printer		Printermc				200
52		4080.00		8160.00		200	0			Printer		Printermc				200
53		4080.00		8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
54		4080.00		8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
55		4080.00		8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
56		4080.00		8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
57		4080.00		8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
58		4080.00		8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
59		4080.00		8160.00		200	0			S25_L1	S25	Conveyor001				200
60		4080.00		8160.00		200	0			S25_L1	S25	Conveyor001				200
61		4080.00		8160.00		200	0			S25_L1	S25	Conveyor001				200
62		4080.00		8160.00		100	0			Shuttle1_2		Shuttle				100
63		4080.00		8160.00		100	0			Shuttle2_1		Shuttle				100
64		4080.00		8160.00		150	0			ConvTG		conv5_2001				150
65		4080.00		8160.00		200	0			Turn_Station		Printermc				200
66		4080.00		8160.00												
67		4080.00		8160.00												
68		4080.00		8160.00												

FIG. 7E

FOR 2020-2021

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
69		4080.00		8160.00												
70		4080.00		8160.00												
71		4080.00		8160.00												
72		4080.00		8160.00												
73		4080.00		8160.00												
74		4080.00		8160.00												
75		4080.00		8160.00												
76		4080.00		8160.00												
77		4080.00		8160.00												
78		4080.00		8160.00												
79		4080.00		8160.00												
80		4080.00		8160.00												
81		4080.00		8160.00												
82		4080.00		8160.00												
83		4080.00		8160.00												
84		4080.00		8160.00												
85		4080.00		8160.00												
86		4080.00		8160.00												
87		4080.00		8160.00												
88		4080.00		8160.00												
89		4080.00		8160.00												
90		4080.00		8160.00												
91		4080.00		8160.00												
92		4080.00		8160.00												
93		4080.00		8160.00												
94		4080.00		8160.00												
95		4080.00		8160.00												
96		4080.00		8160.00												
97		4080.00		8160.00												
98		4080.00		8160.00												
99		4080.00		8160.00												

FIG. 7F

	A	B	C	D	E	F	G	H	I	J	K	L	M
	Main												
1	1												
2	2												
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

board #	board name	second side +	components per panel	up to 18.7 x 18.7	up to 32 x 32	up to 55 x 55	boards per panel	components per board	board for simulation	# name	pc	999	999	999	999	999	999	999	999
1	7300 Buffer									7300 Buffer	999	999	999	999	999	999	999	999	999
2	7511 Conveyor 1060									7511 Conveyor 1060	999	999	999	999	999	999	999	999	999

FIG. 8

	N	O	P	Q	R	S	T	U	V	W	X	Y
1	10	11	12	13	14	15	16	17	18	19	20	21
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13	999	999	999	999	999	999	999	999	999	999	999	999
14	999	999	999	999	999	999	999	999	999	999	999	999

FIG. 8A

	Z	AA	AB	AC	AD	AE	AF	AG	AH
1									
2	22	23	24	25	26	27	28	29	30
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13	999	999	999	999	999	999	999	999	999
14	999	999	999	999	999	999	999	999	999

FIG. 8B

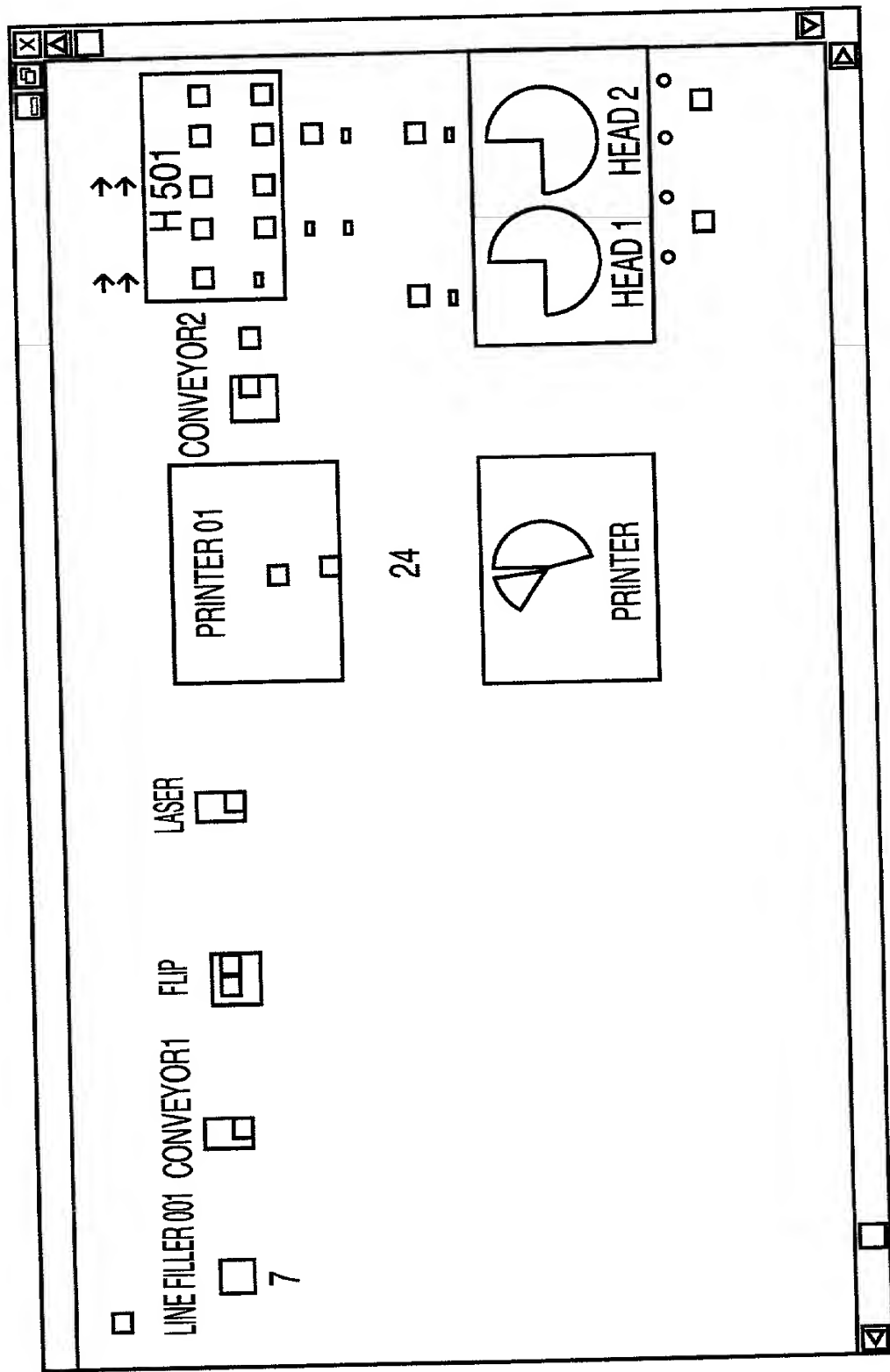


FIG. 9



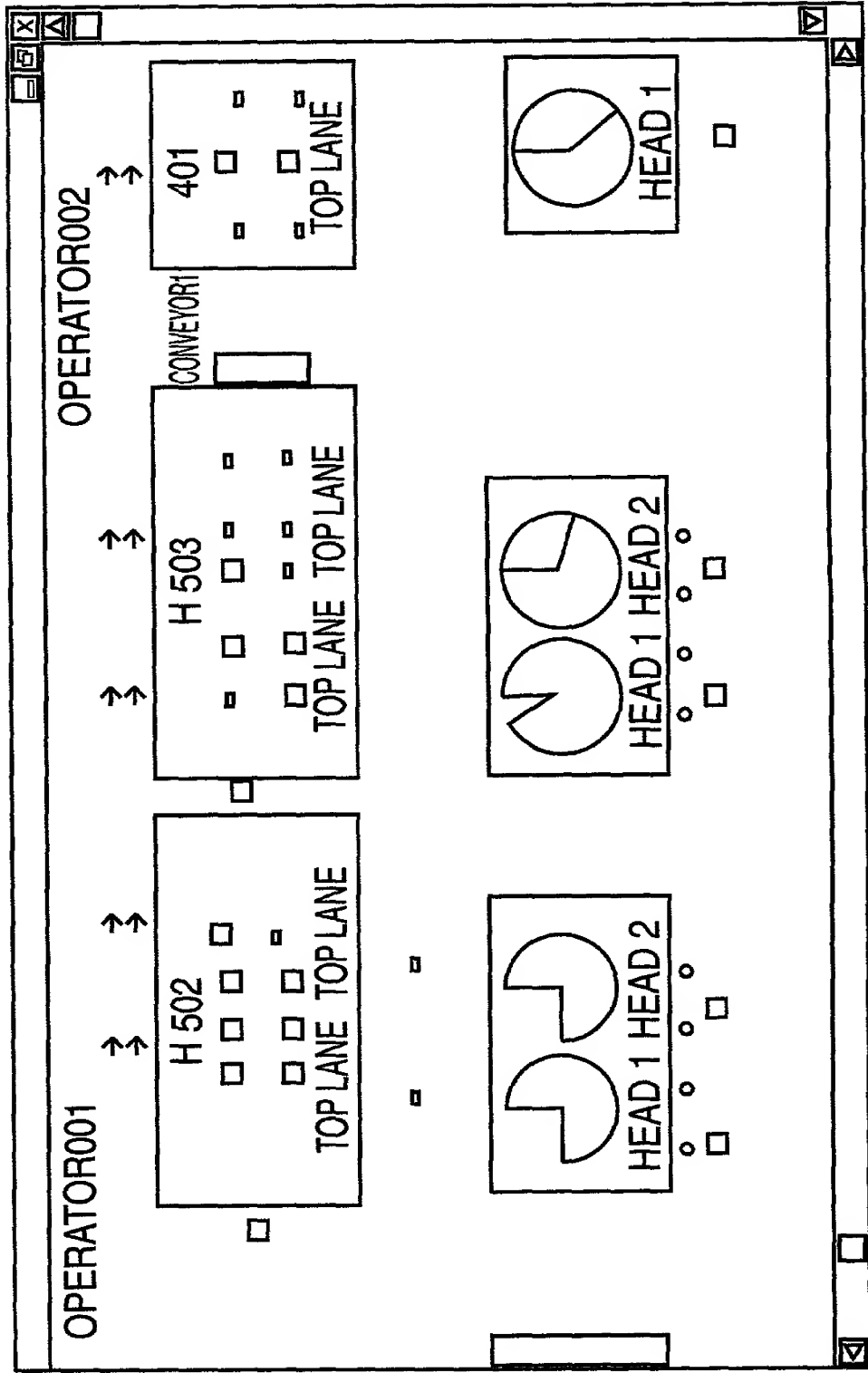


FIG. 9A

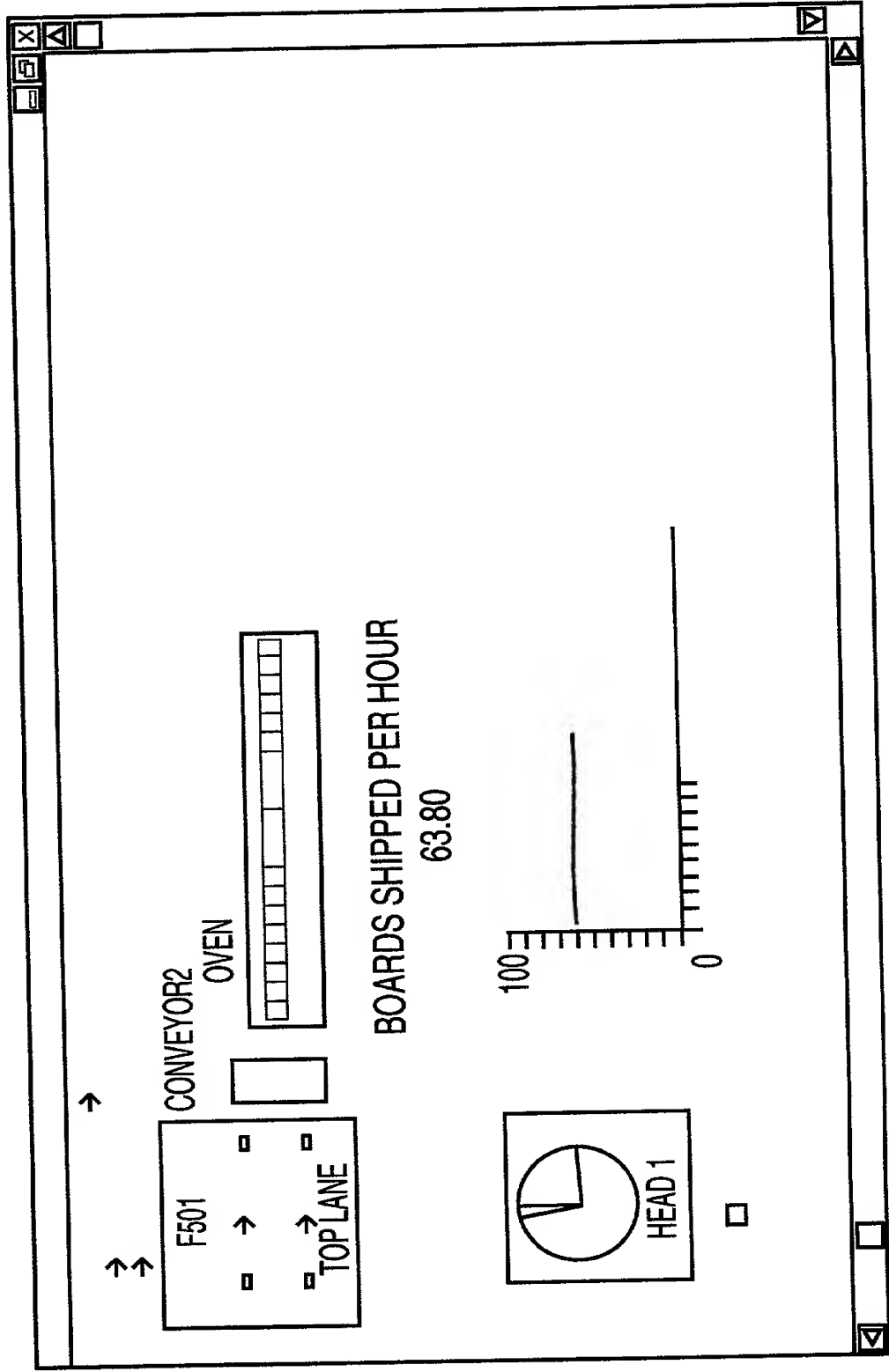


FIG. 9B

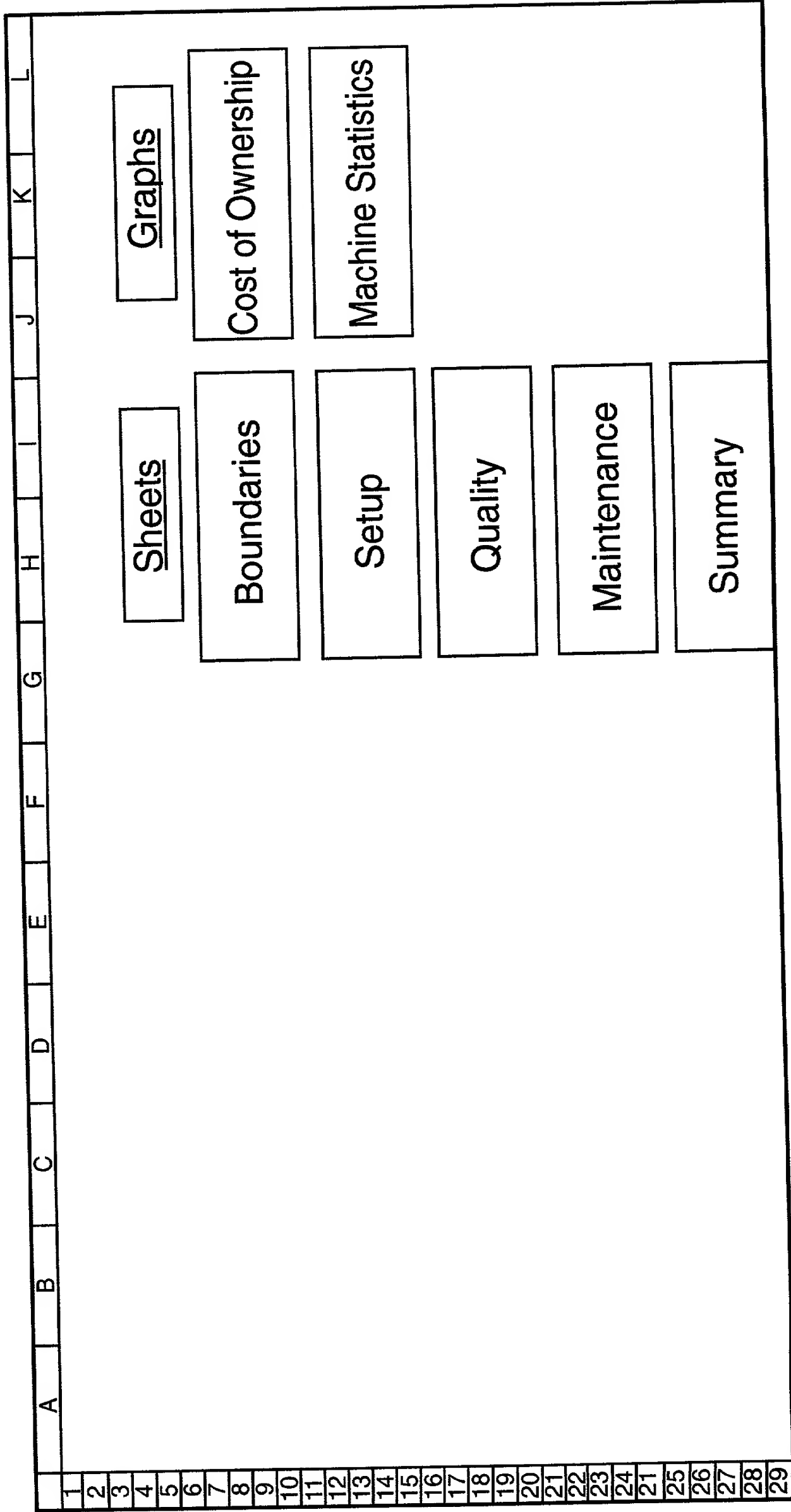


FIG. 10

	A	B	C	D	E	F	G
1	<b>Boundaries</b>						
2	Project	Test1					
3	Date	31/March 2001					
4							
5		default project					
6	<b>Financial</b>						
7	Currency (Input)	0					
8	Currency (Output)	0					
9	Exchange ratio (In/Out)	0.00					
10	Depreciation	0.00%					
11	Interest Rate	0%					
12	<b>Labor</b>	0					
13	Operator	0.00					
14	Supervisor	0.00					
15	Maintenance	0.00					
16	Rework	0.00					
17	<b>Utilities</b>	0					
18	floorpace (/year/spm)	0.00					
19	electricity (kWh)	0.00					
20	Nitrogen (???)	0.00					
21	air (???)	0.00					
22							
23							
24							
25							
26							

Main

FIG. 11

	A	B	C	D	E	F	G
1	<b>Setup</b>						
2							
3	<b>internal setup</b>						
4	Operator labor per hour	0.00	hours				
5	setup changes every x h						
6	# of setup changes per week	0					
7	setup changes per year		min.				
8	time per setup	0.00	hours				
9	setup time per year						
10	internal setup costs	0					
11	<b>external setup</b>						
12	external setup labour per hour		minutes per setup				
13	external setup						
14	external setup per year	0.00	hours				
15	Investment for external setup						
16							
17							
18							
19	external setup costs per year	0					
20		0					
21	setup costs	0					

Main

FIG. 12

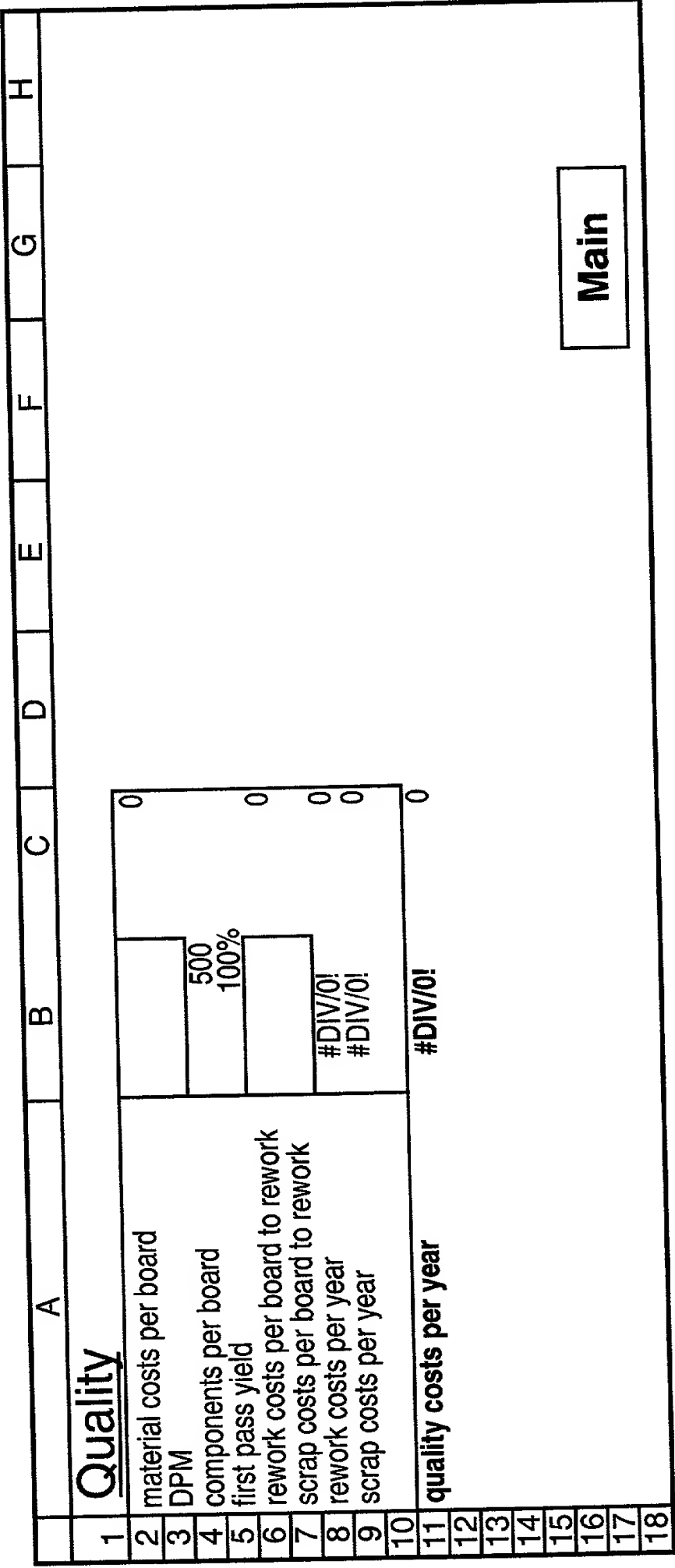


FIG. 13

	A		B	C	D	E	F	G	H	I
				minutes	# of workers	who does maint.	downtime factor	line operator (h)	maint. team (h)	downtime (h)
1	<b>Maintenance</b>				0					
2	line workers									
3	maintenance per shift (min)				1		100%	0.00	0.00	#DIV/0!
4	maintenance weekly (min)				1		100%	0.00	0.00	#DIV/0!
5	maintenance monthly add. (min)				2		100%	#DIV/0!	#DIV/0!	#DIV/0!
6	maintenance quarterly add (min)				3		100%	0.00	0.00	#DIV/0!
7	maintenance every x h add (min)				3		100%	0.00	0.00	#DIV/0!
8	maintenance time calculated (h)		10,000					#DIV/0!	#DIV/0!	#DIV/0!
9	labor costs							#DIV/0!	#DIV/0!	0
10										
11	maintenance costs per year								#DIV/0!	0.000000 €
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

Main

FIG. 14

A		B	C	D	E	F	F	H	I	J	K
Cost of Ownership											
1	Investment		Cost per year		Cost per board		%		Capacity		
2	investment		0		0		0		hours available per year		
3	spareparts		0		0		0		internal setup		
4	service		0		0		0		maintenance		
5			0		0		0		quality		
6			0		0		0		technical availability		
7									hours total		
8	Labor		#DIV/0!		0		0		boards per hour		
9	Operations		0		0		0		boards per shift		
10	Supervisor		#DIV/0!		0		0		boards per week		
11									boards per year		
12											
13	Misc.		0		0		0				
14	Setup		#DIV/0!		0		0				
15	Maintenance		#DIV/0!		0		0				
16											
17											
18	Utilities		0		0		0				
19	Floorspace		#DIV/0!		0		0				
20	Electricity		#DIV/0!		0		0				
21	Nitrogen		#DIV/0!		0		0				
22	Air		#DIV/0!		0		0				
23											
24											
25	Quality		#DIV/0!		0		0				
26	rework costs per year		#DIV/0!		0		0				
27	scrap costs per year		#DIV/0!		0		0				
28											
29											
30	Costs per year		#DIV/0!		0		0				
31											

Main

FIG. 15



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2														
3														
4														
5														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														

UTILITIES 9152

QUALITY

MISC 13209

LABOR 53658

INVESTMENT 127838

FIG. 16

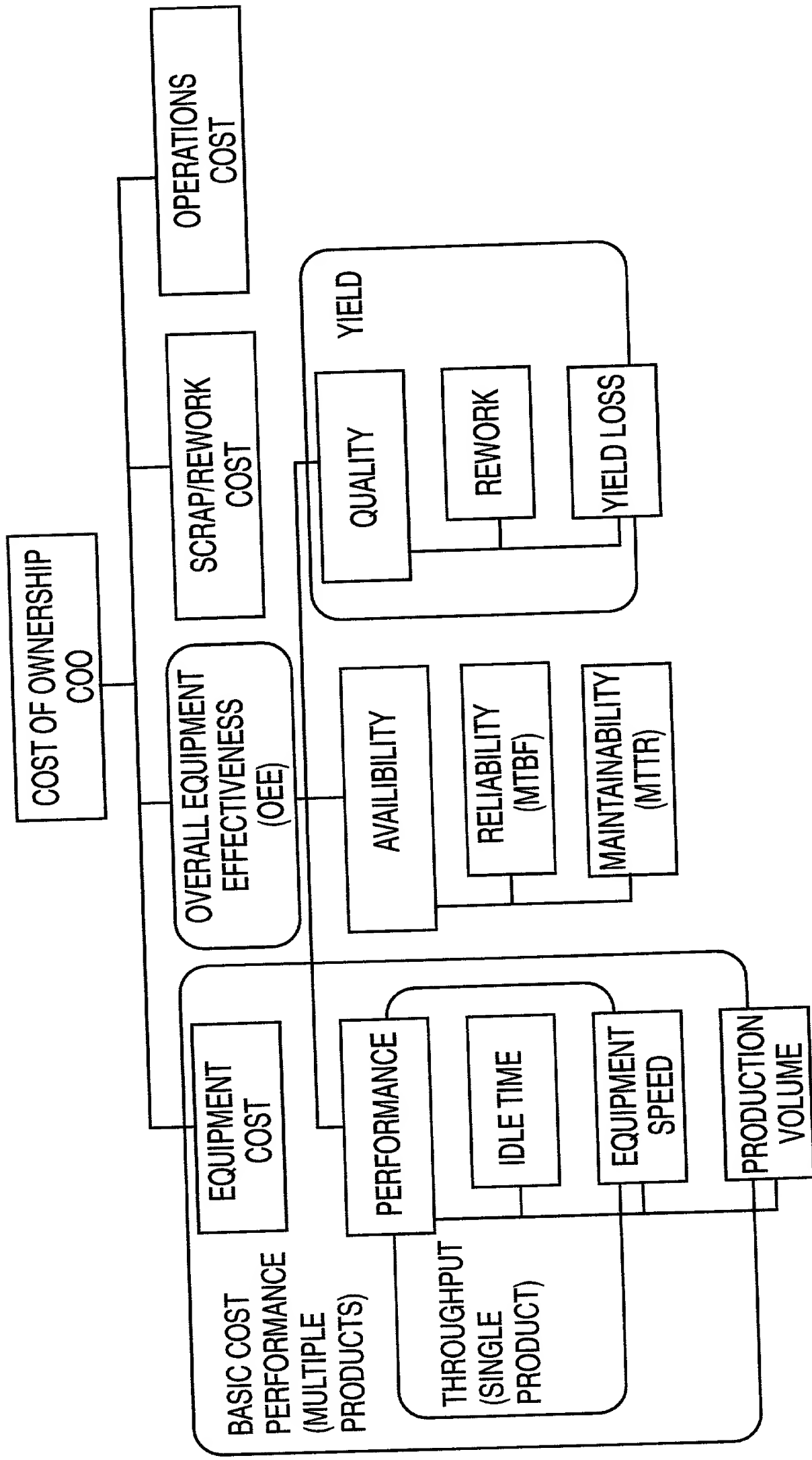


FIG. 16A

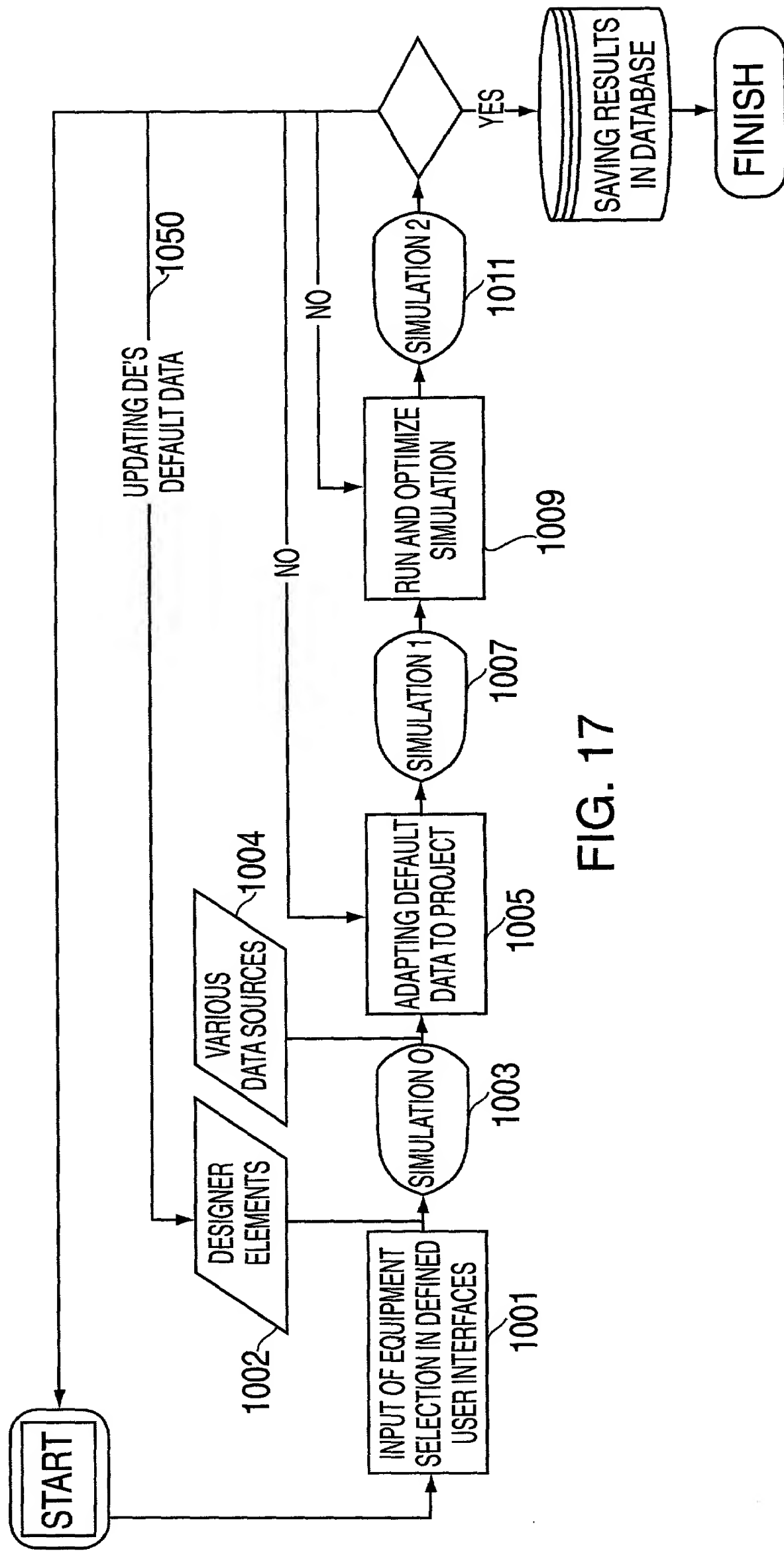


FIG. 17



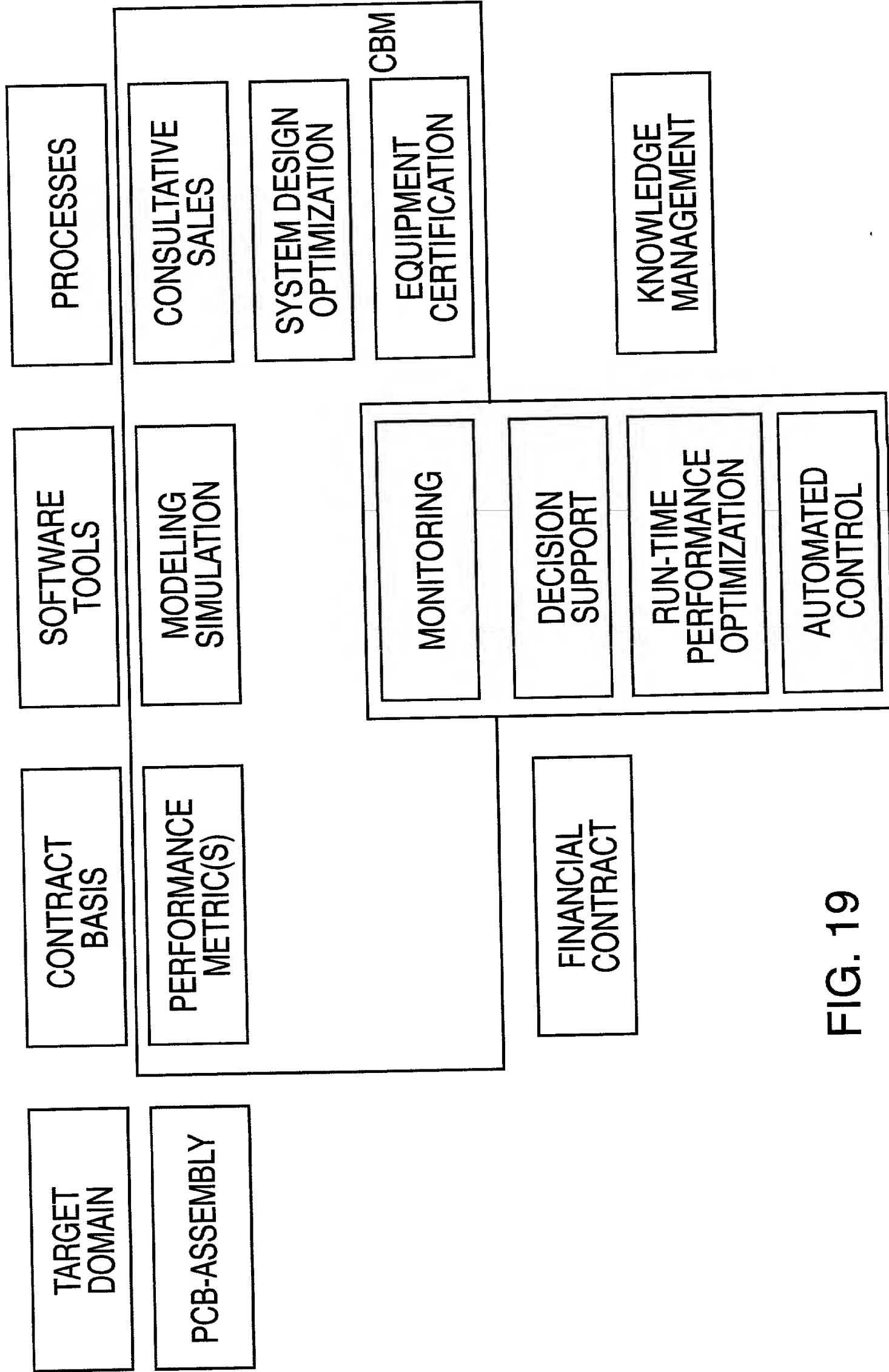


FIG. 19

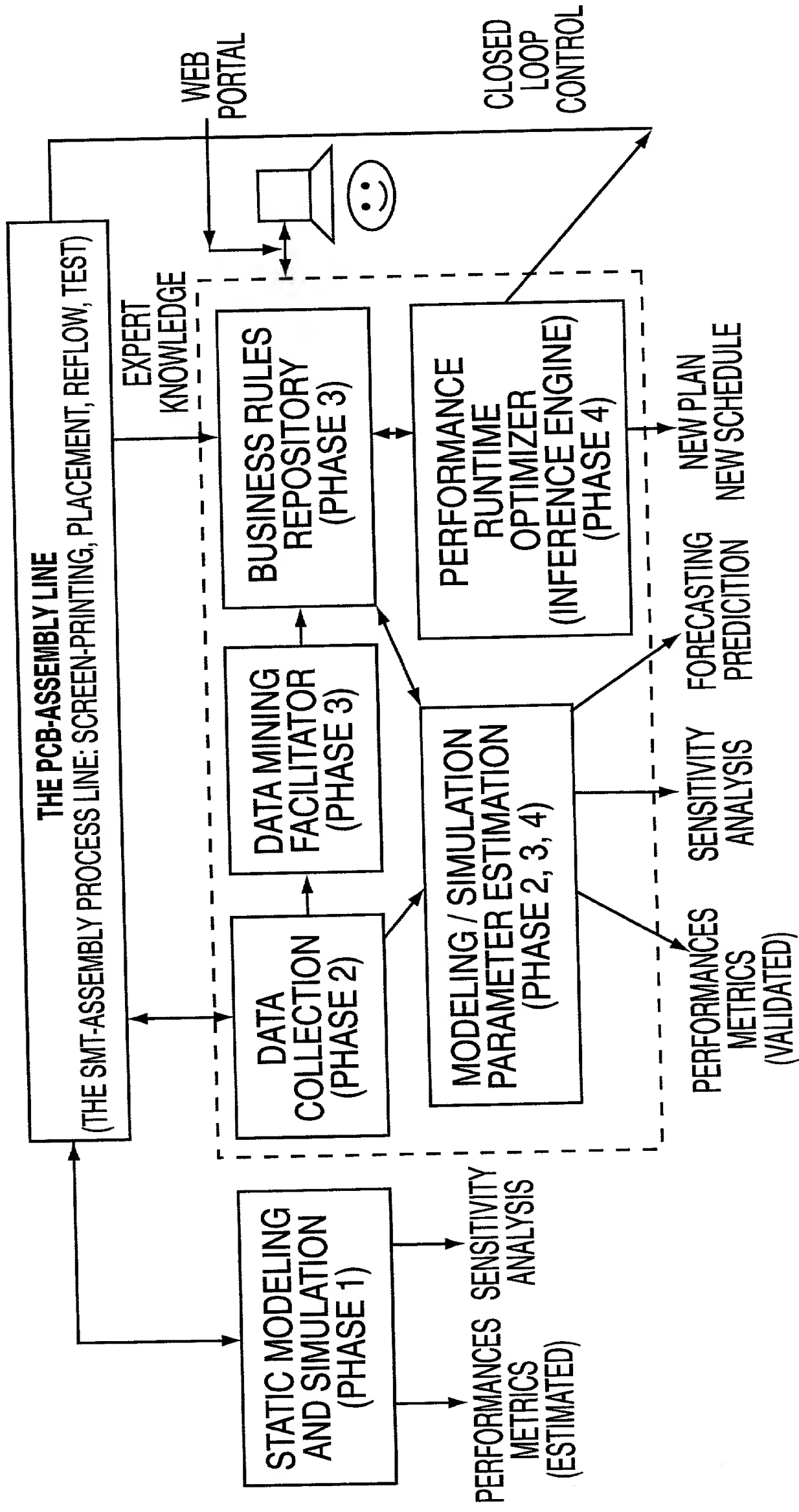


FIG. 20

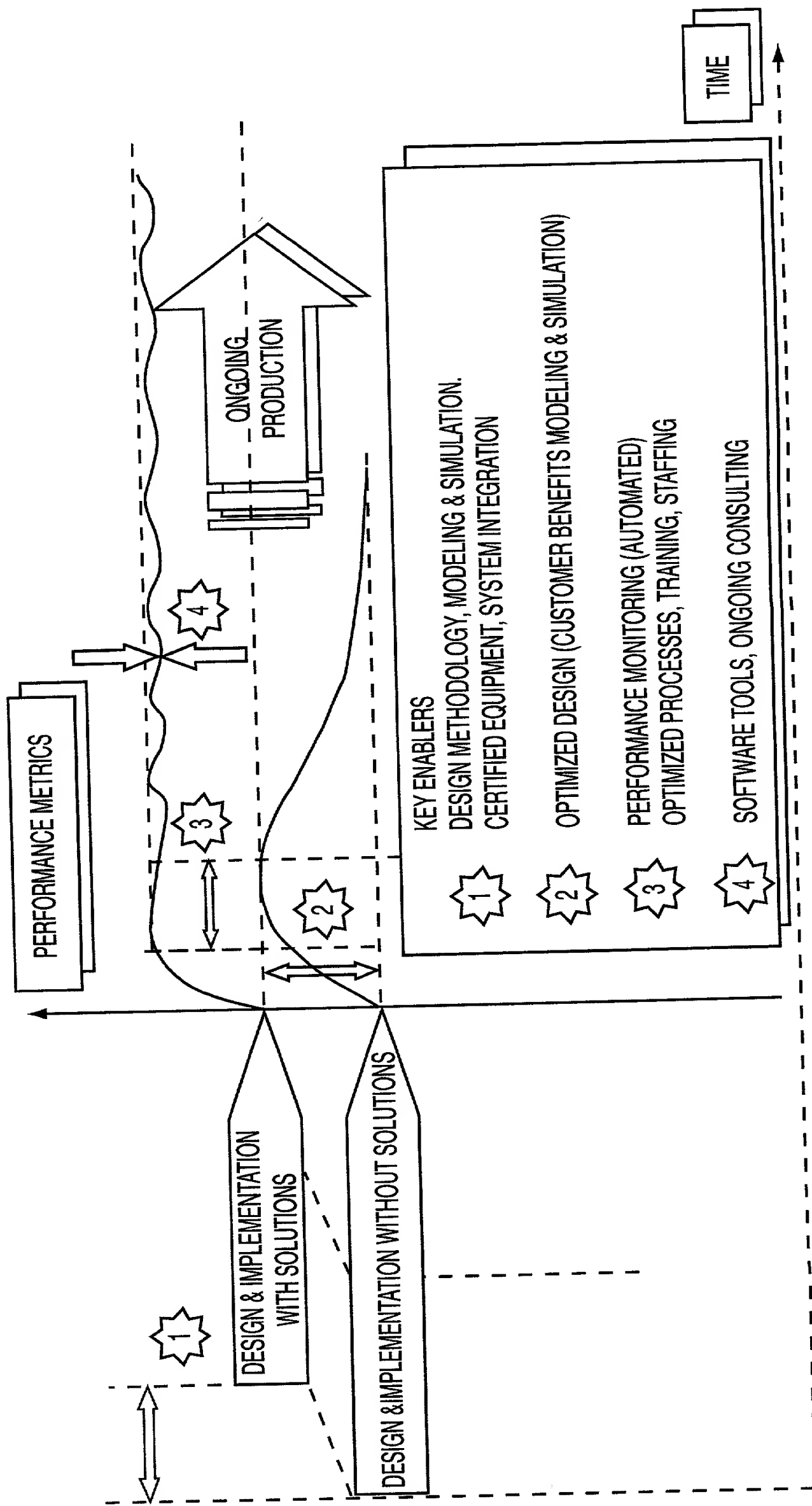


FIG. 21





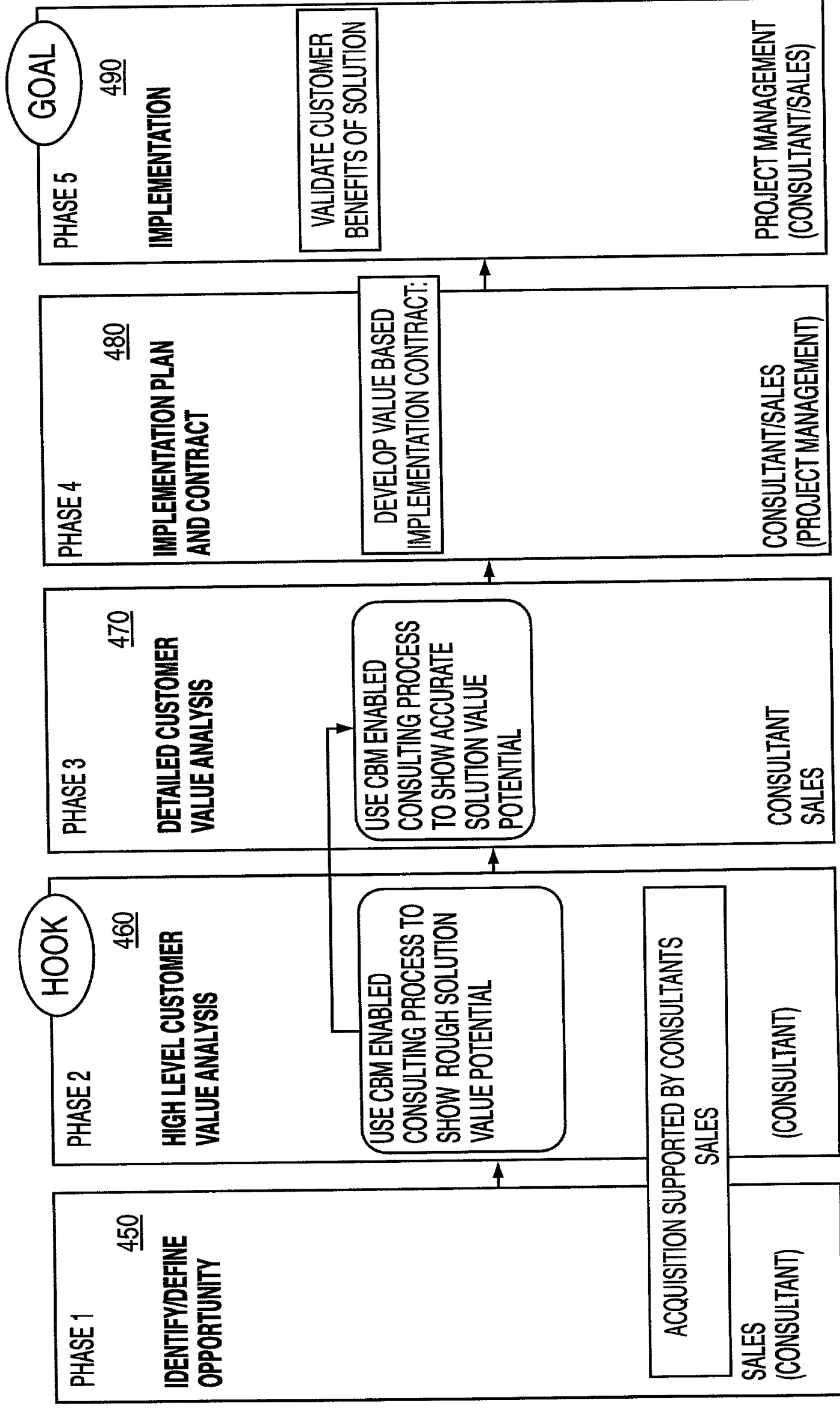


FIG. 23

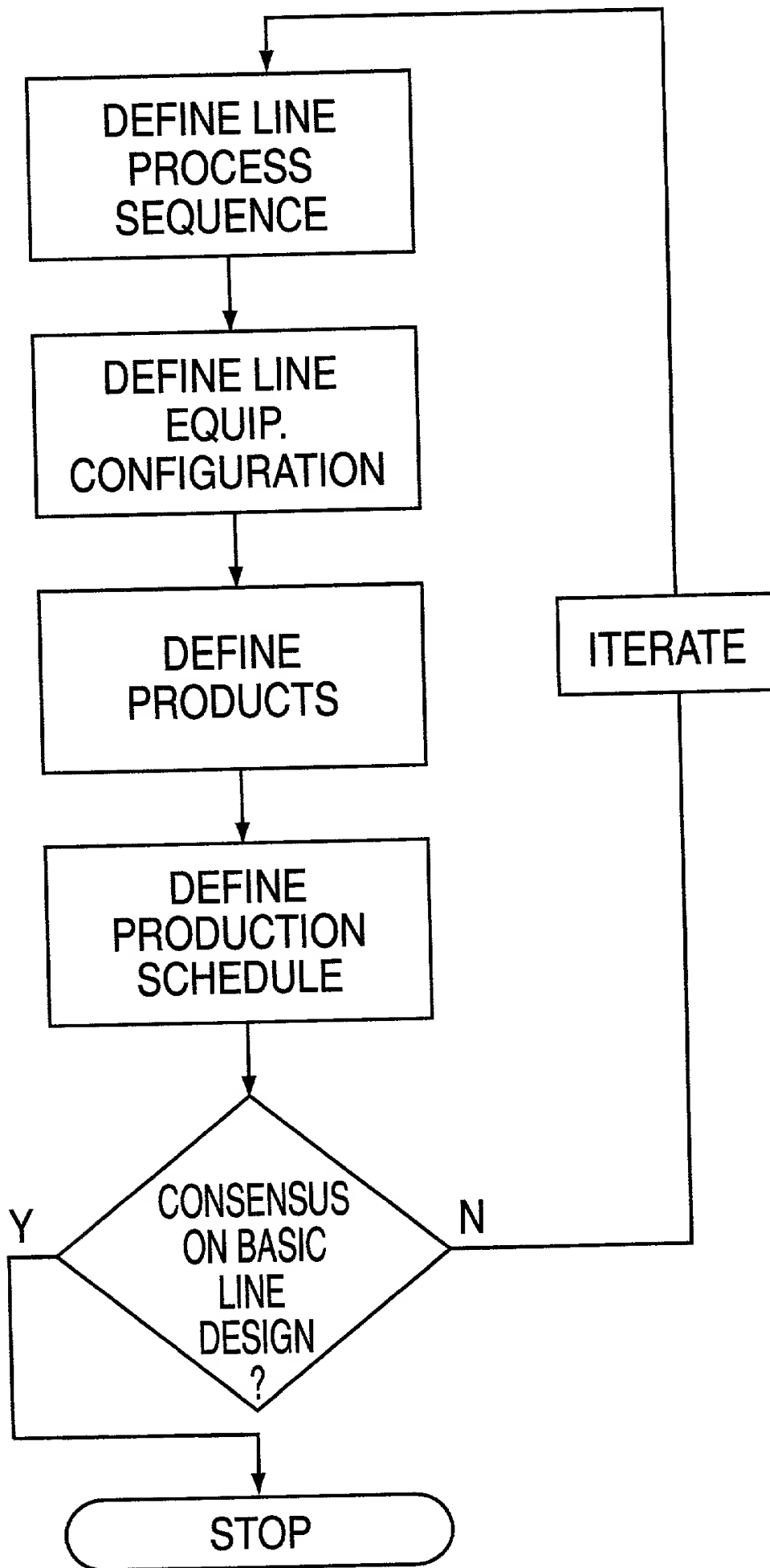


FIG. 24

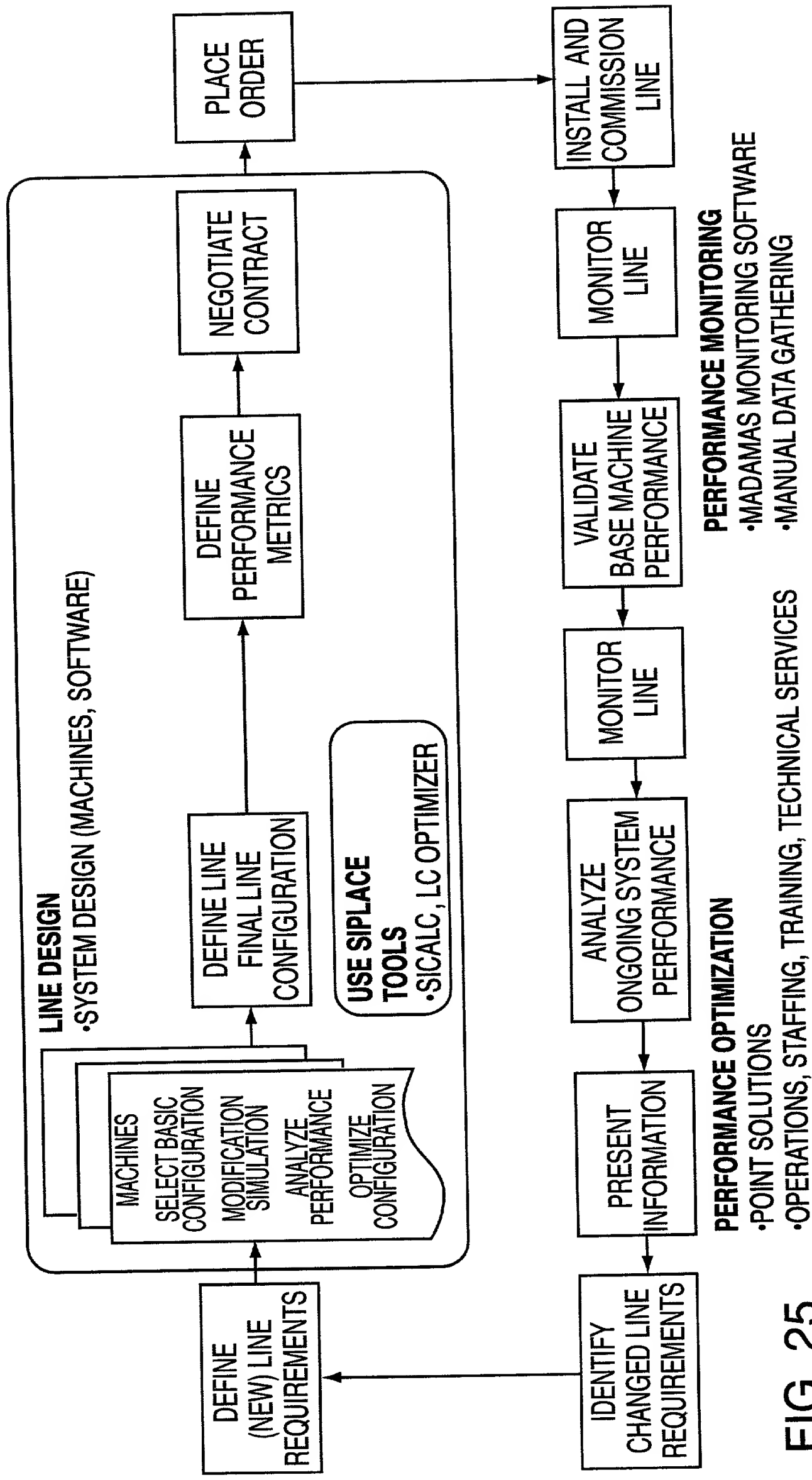


FIG. 25

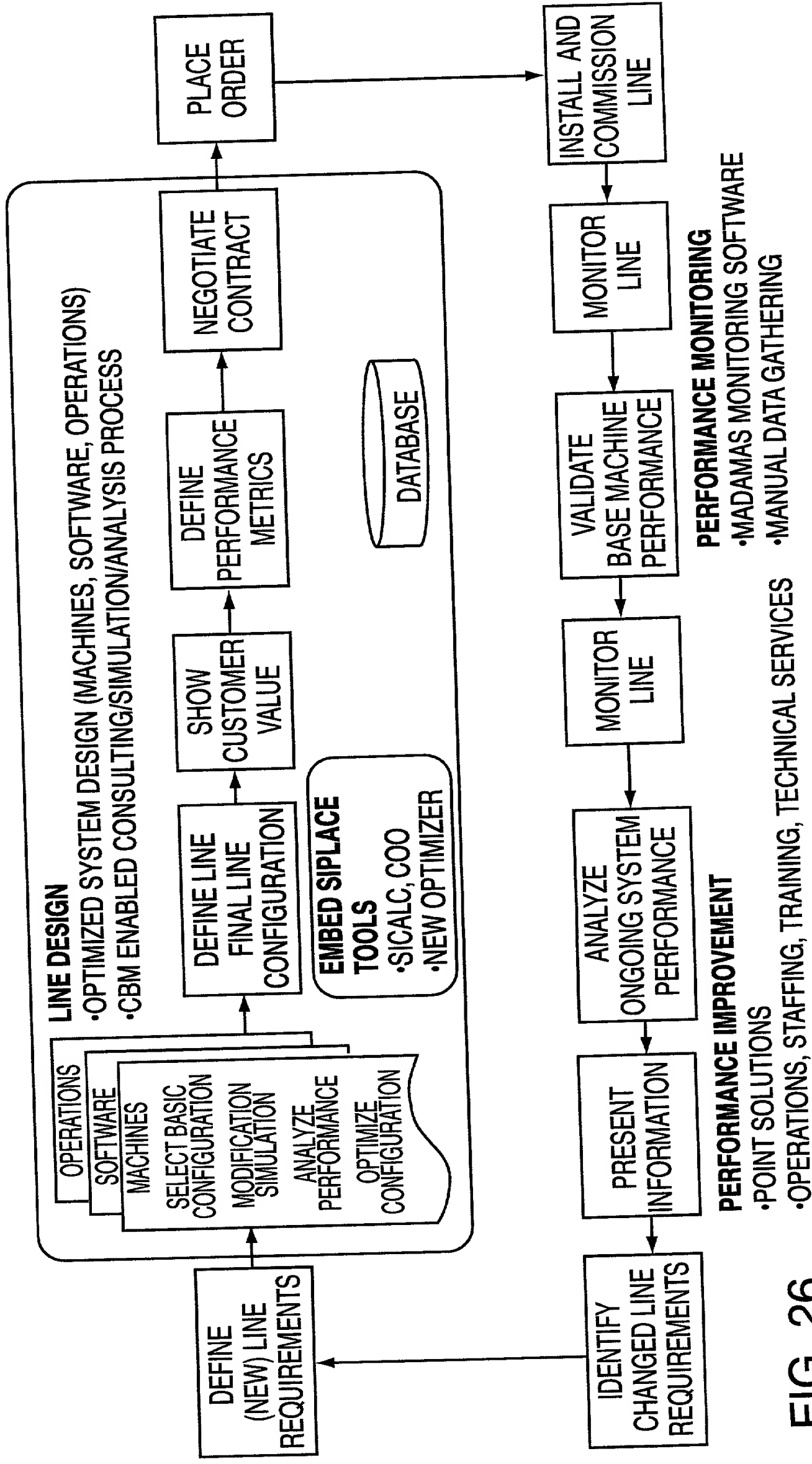


FIG. 26

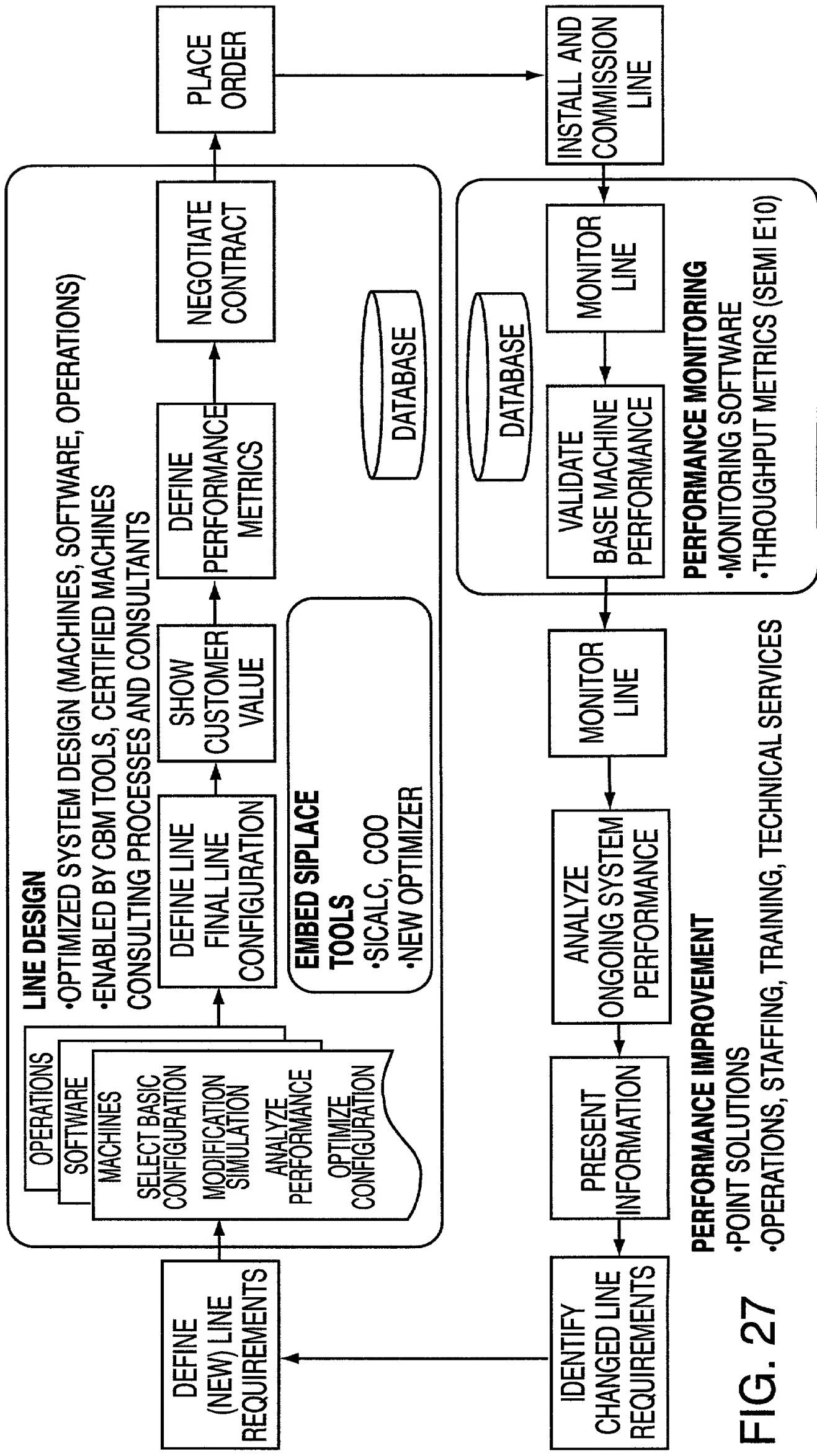


FIG. 27

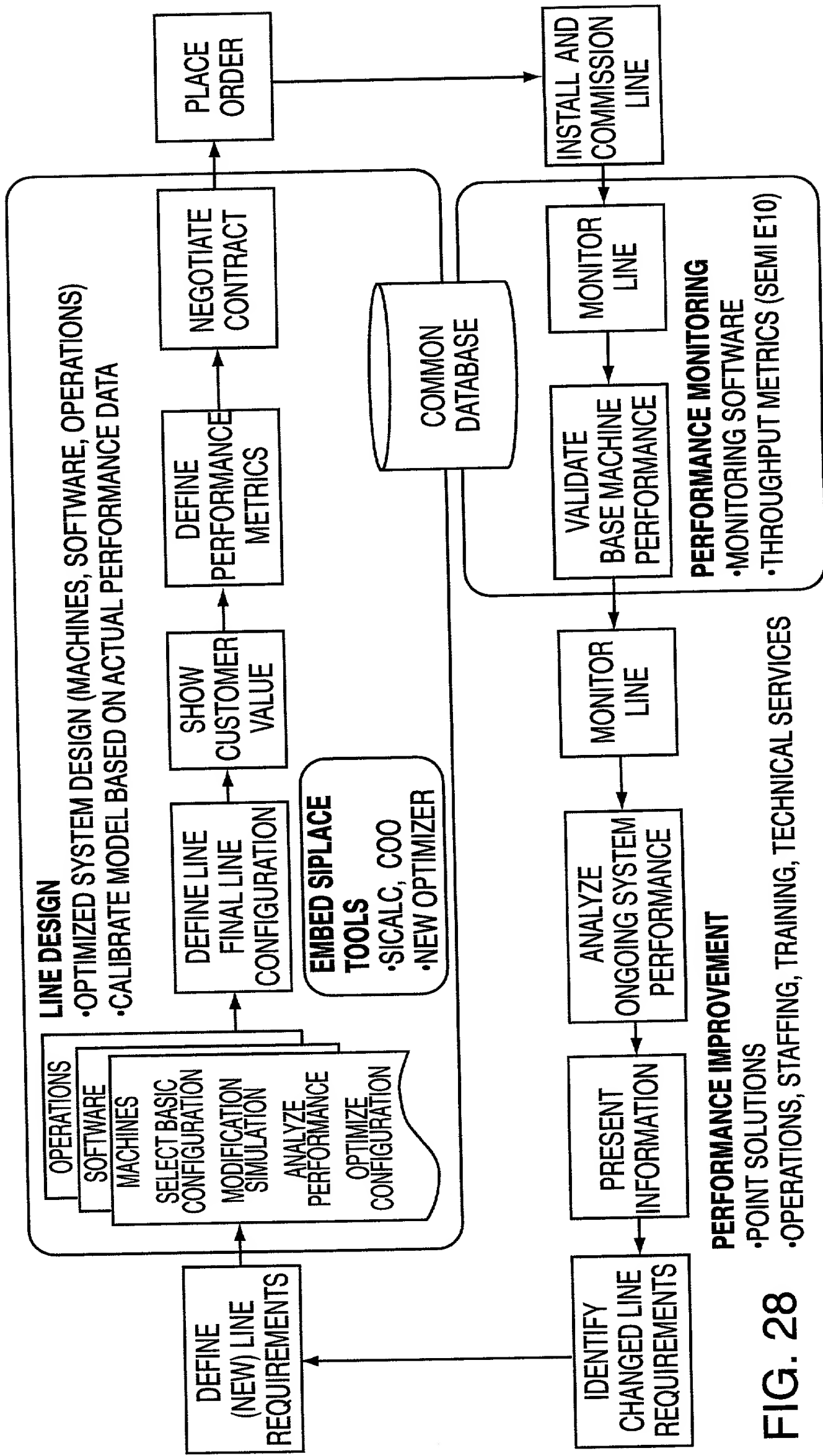


FIG. 28



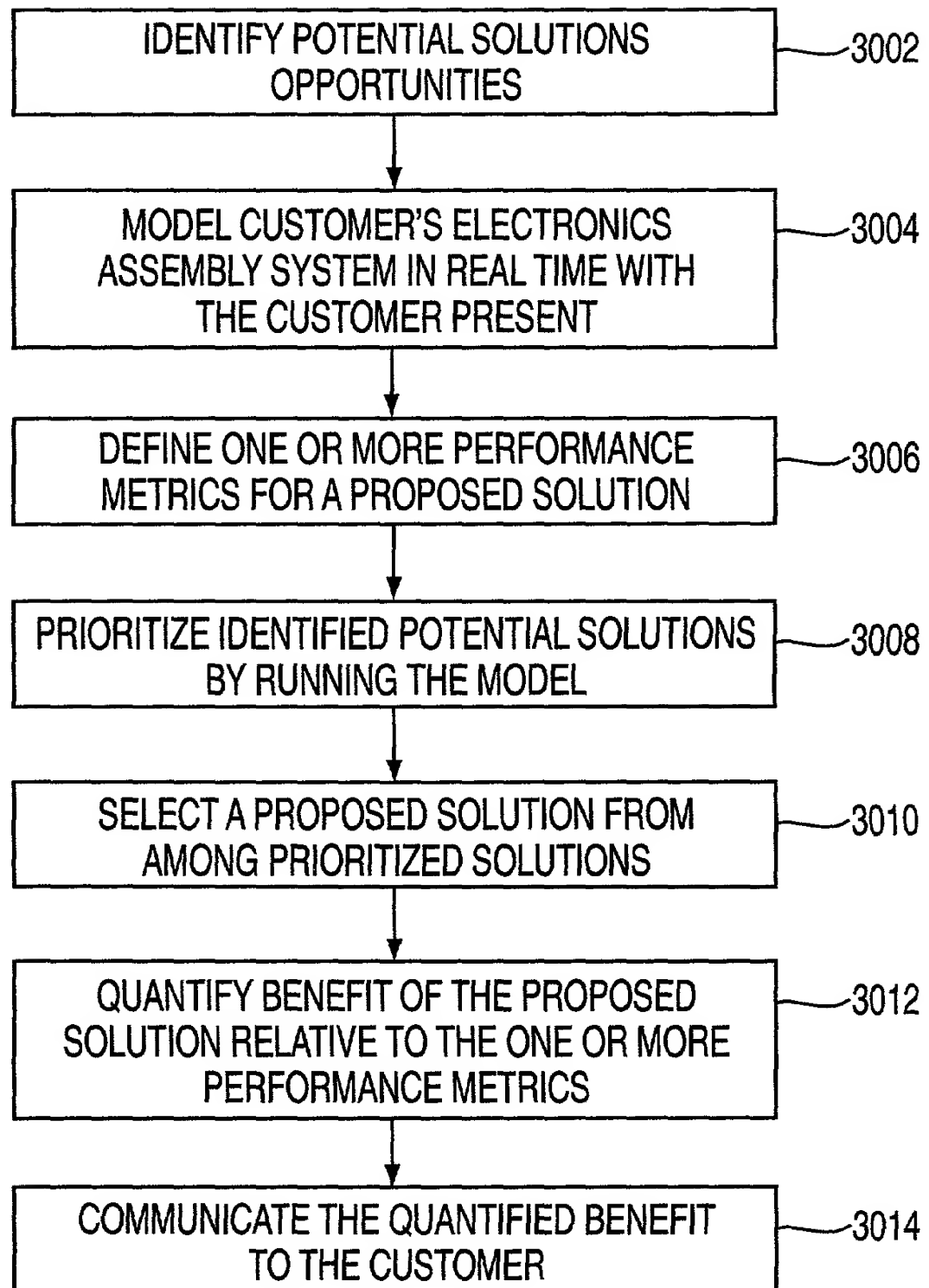


FIG. 30



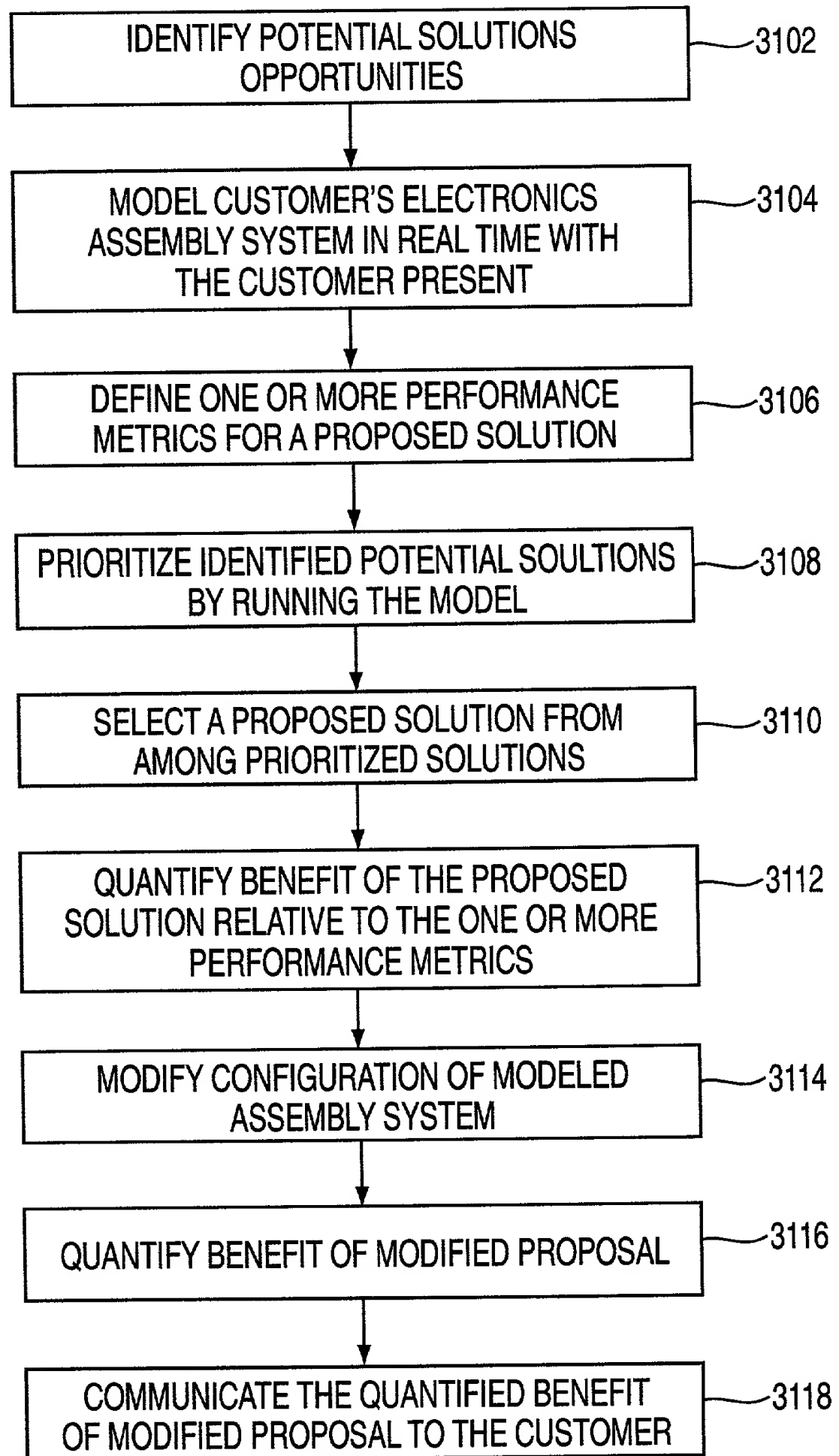


FIG. 31

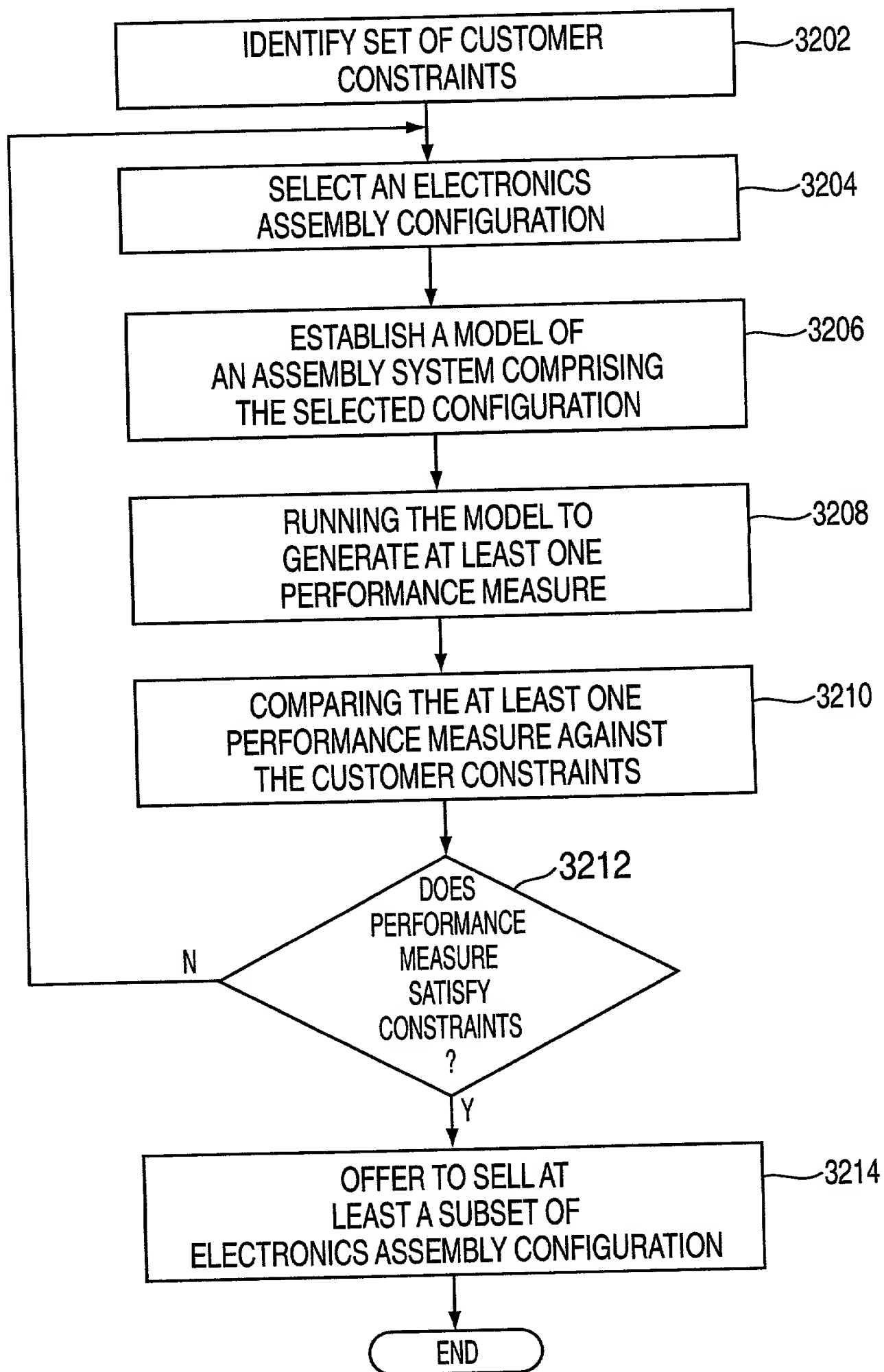


FIG. 32

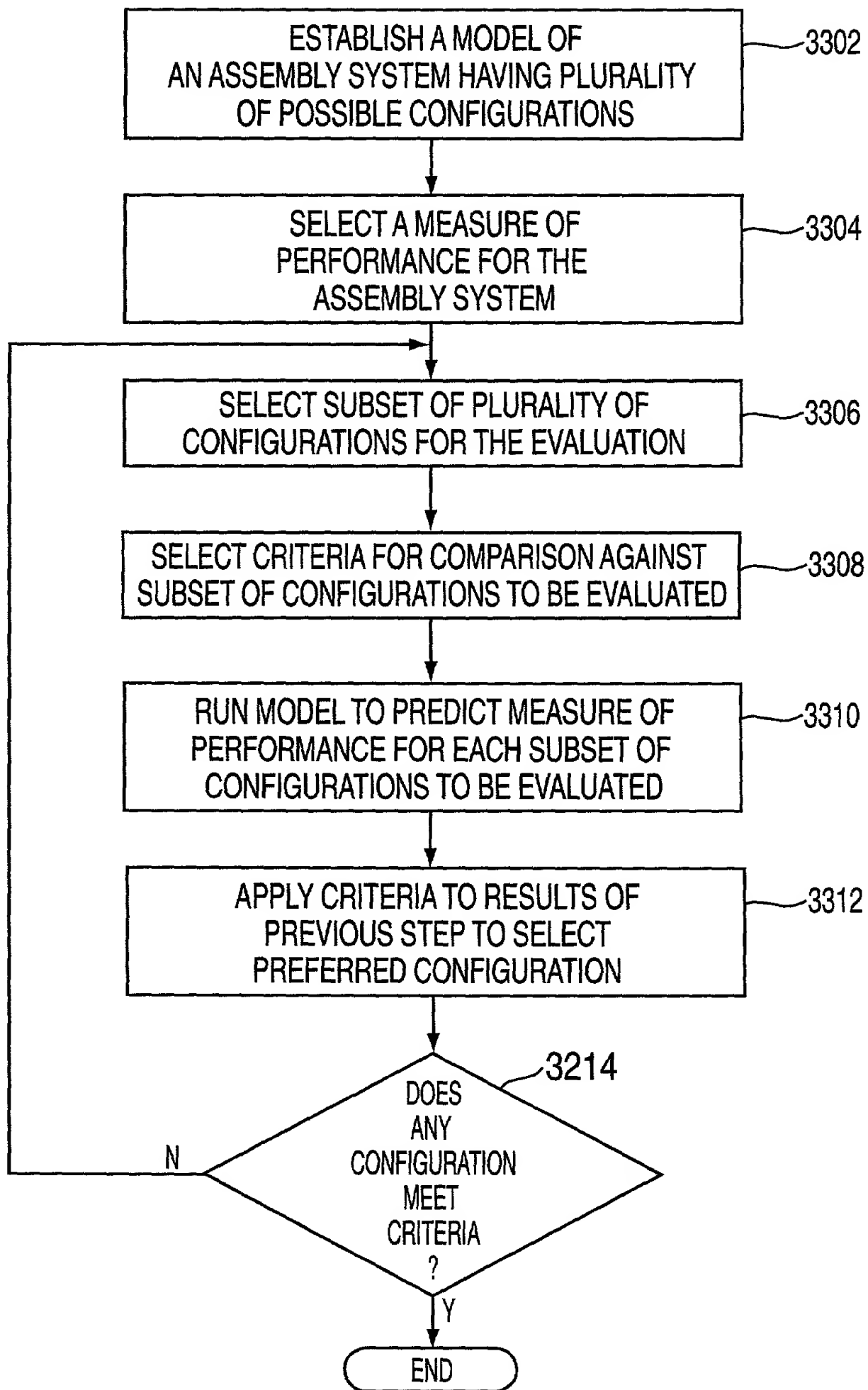


FIG. 33

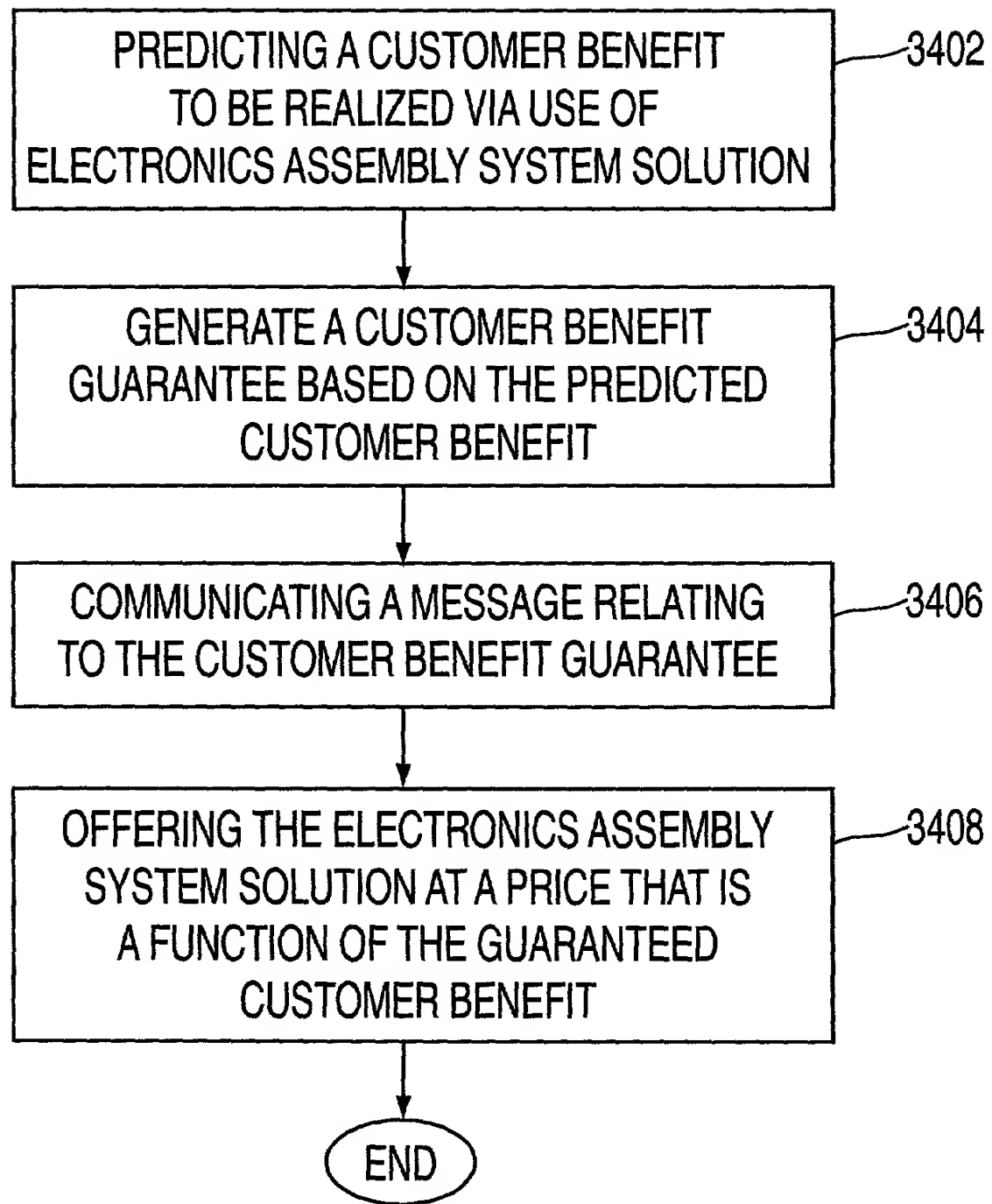


FIG. 34

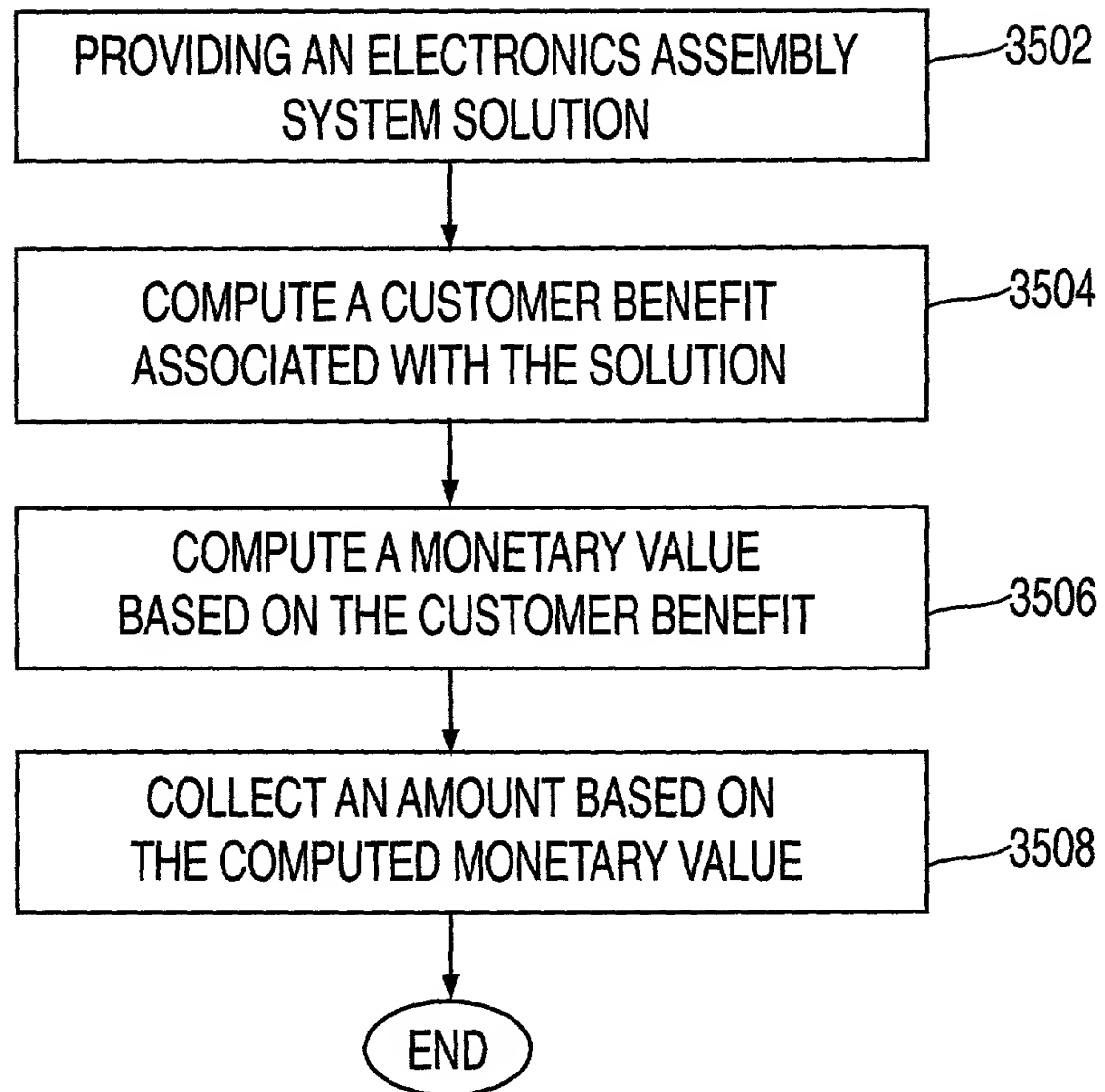


FIG. 35

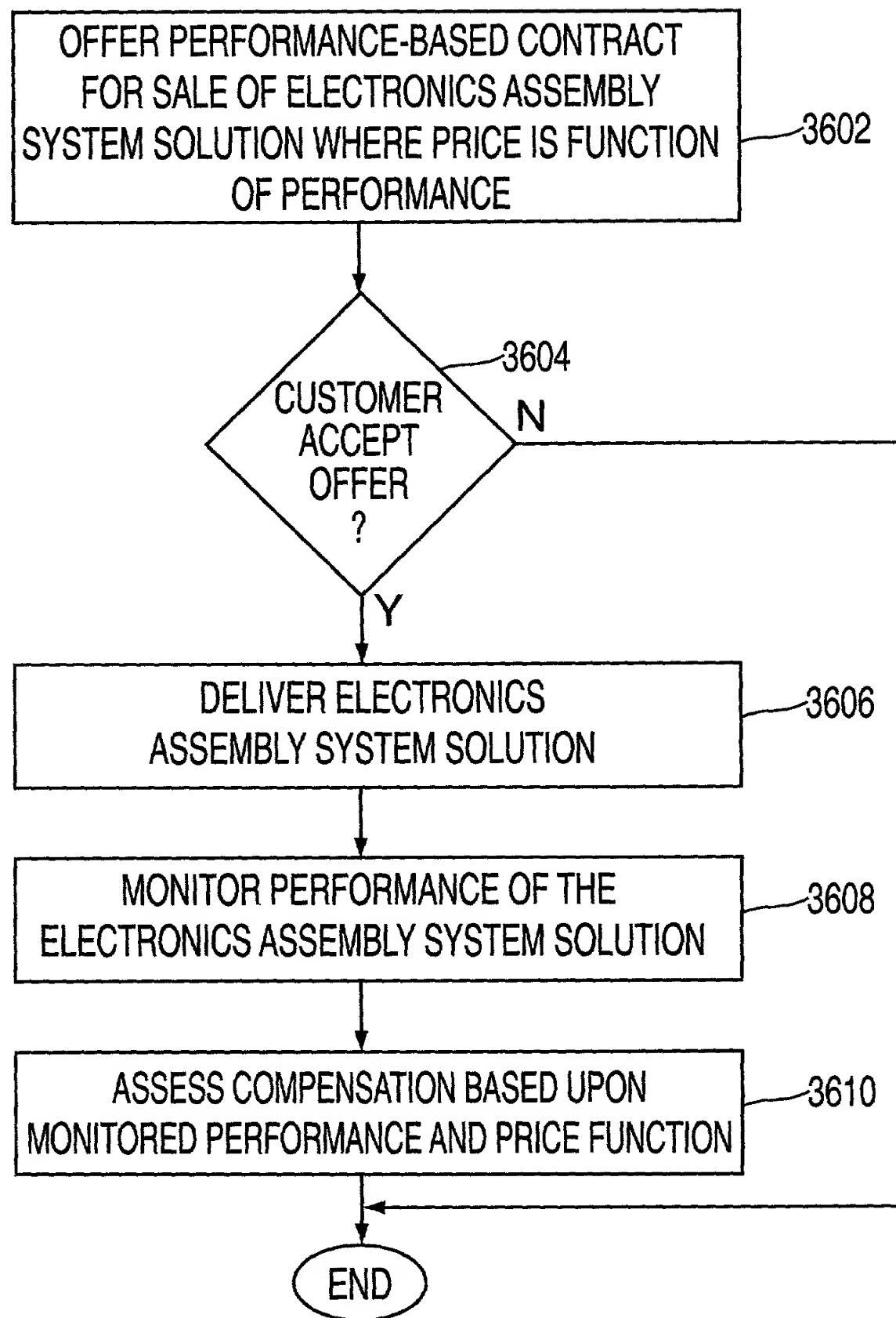


FIG. 36